The Iron Age

A Review of the Hardware and Metal Trades.

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THE APPLICATION OF METAL TO ART.

Bronze and Zinc Statuary, Metal Ornaments, etc.

Within the past ten years the American taste for ornamental metal work has grown so rapidly that an extensive branch of industry has been developed to meet the constantly increasing demand. Before this period almost all goods of this character were imported from the great manufactories of Leipsic, Berlin, and other cities of Germany, but the casting of metal statues, ornaments, etc., is now a successful department of many American foundries, while there are several concerns whose attention is entirely given to this department of metal working. The advantages of iron and bronze over marble, stone or terra-cotta for such purposes are strongly marked. Marble is costly, and cheaper stone will crack and decay when exposed to atmospheric influences. The art of molding ornaments in terra-cotta and stucco has been much improved of late, and many beautiful objects have been produced from these materials, but under the action of rain and frost they crack and crumble away. And, beside, the use of cast iron and bronze permits a sharpness and delicacy of outline impossible in stucco or stone. Articles made of these metals, and in the case of cast iron, if occasionally painted, are imperishable, and will not crack when exposed to wet or frosty weather.

BRONZE

perhaps ranks the highest, after the precious metals, as regards its adaptability to articles of elegance and ornament. This metal is not of recent discovery or use, for Pliny tells us that the art of casting bronze was brought to considerable refinement 700 years before the Christian era, and that it reached its hight during the time of Alexander the Great, or 330 B. C. Copper and tin were among the earliest metals known, and the combination of the two in an alloy was a precess which must also have suggested itself at a very early date. The term "brass" in the bible is supposed by many to mean bronze, and in the book of Exodus we read of one Bezaleel, a man expert "in all manner of workmanship to devise cunning works, to work in gold and in silver and in brass" (bronze). We have also some extraordinary accounts handed down to us by the historian Diodorus Siculus, who describes the gardens of Semiramis, the Assyrian queen, as being adorned with works of gold and bronze of great magnitude, and as an apparent confirmation of these statements, Mr. Layard, the explorer, says that he found in the excavations at Nineveh various bronze ornaments, evidently cast in the mold. M. Botta discovered, among other metal articles in the palace of Khorsabad, a very finely molded bronze lion. The seventh chapter of first Kings mentions Hiram of Tyre as a celebrated artificer in bronze, who must, therefore, have lived about 1000 years before the Christian era.

The ancients not only manufactured ornaments from this alloy, but also implements for the daily purposes of life, weapons for war, and indeed a full set of bronze surgical instruments was discovered in the ruins of Pompeii. The Egyptians, Greeks and Romans used bronze in the greater part of the decorations of their magnificent temples and palaces, and from the ruins which still remain of these grand structures we can form some idea of the perfection to which the art of casting bronze had been carried by these people. The wealth of some of the ancient cities has been estimated by the number of their bronze statues. Delphos, Athens and Rhodes are said to have each possessed 3000; in Rome the public edifices were adorned with ornaments of this character, and it was remarked that in Rome "the people of brass" were not less numerous than the Roman people. By them bronze was regarded as a sacred metal, endowed with mysterious powers of driving away evil spirits. The laws were inscribed on tables of bronze, and on the bronze coins were placed the words *moneta sacra*. The Romans, however, never attained great eminence in the art. Their earlier statues were executed by Etruscan artists, but as their dominion widened the city became filled with works from the best schools of Greece, and eventually many artists from the latter country, unable to obtain employment among their own people, settled in Rome. In the time of Nero, Zenodorus executed some magnificent works, among which was a statue of the emperor, 110 feet high.

The following table of proportions of ancient bronze, for which we are indebted to Knight's English Cyclopedia, are extremely interesting:

	a.	*b.*	*c.*	*d.*	*e.*	*f.*	*g.*
Tin	12	22·02	19·66	26·74	19·5	?	15
Copper	88	77·60	80·27	73·00	80·5	97	85
	100	99·62	99·93	99·94	100	100	100

a. Bronze from Celtic vessels, swords and spears. *b.* Arrowhead from an Egyptian tomb. *c.* A cast coffin from Albal, on the borders of China. *d.* Another coffin. *e.* Chinese gong. *f.* Bronze springs for the balistal. *g.* An antique sword found in the environs of Abbeville.

It is probable that statues of bronze and brass were formerly wrought out with the hammer. Pansanias describes the process of making a very ancient brass statue of Jupiter. The plates of metal were beaten into the form desired, on a nucleus of another material. If the work was too large to be made in one piece, several pieces were shaped and the different parts fitted and fastened together by pins and keys. It is probable that the art of casting metal statues passed through three stages. The first consisted in melting the metal in a solid mass and beating it out with hammers. The next step probably was the casting of the

METAL STATUARY—REDUCTION OF "THE AMAZON" IN ZINC.

object solid in a mold. Finally, the art of using a core was introduced, enabling the founder to limit the thickness of his casting at pleasure. Pliny tells us that the ancients cast their statues in pieces and soldered them together. Passing down nearer to our own time, we find the name of Guglielmo della Porta, distinguished on account of his employing a new process for casting the statue of Paul III. The metal was run from the furnace and carried downward by a duct which admitted it to the underside or bottom of the mold, and thus the metal acted upon by a superior pressure, as in a common fountain, was forced upward until the mold was filled. It was necessary in this process that the mold be kept in a state of great heat in order that the metal might not cool till it was all run. In casting the statue of Louis XIV. a similar method was followed. The wax which regulated the thickness of the metal, or distance between the interior walls of the mold being entirely melted out, and the mold being fixed in a pit with the necessary vents for the escape of the air, the metal was allowed to run from a furnace placed considerably above into a sort of trough or basin. In this were three apertures, closed by plugs, immediately over the chief channel or conduit by which the metal was to be conveyed to the mold.

The largest bronze figure of modern times is a colossal figure of Bavaria, 61½ feet high, placed in front of the Ruhmeshalle, near Munich. It was modeled by Schwanthaler, and cast by Fras Miller at the Royal Foundry. It was made in many pieces.

Bronze possesses in an eminent degree the properties which should characterize a good statuary metal. It is necessary, in the first place, that the material used for such a purpose should flow freely when melted, in order that the minutiæ of the mold may be accurately represented. It must also be tough and hard, so that it will not be injured by accidental blows. The alloy should also be composed of such materials, and these combined in such proportions as to resist the deteriorating influences of the weather. The mixing of the metals, furthermore, should be so conducted that a perfect chemical union of the ingredients will result. Unless this chemical combination takes place, a separation of the metals is likely to occur during cooling, as happened in casting the column for the Place Vendome, of Paris.

Bronze fulfills these requisites. It is exceedingly hard and tough, and impressions stamped upon it will remain fresh and sharp for exceedingly long periods of time, in spite of the effects of the weather and use. This characteristic led the mint of France to issue a bronze coinage in the place of copper. Bronze is more brittle than brass and more fusible than copper. When it contains from 85 to 90 per cent. of copper it is highly malleable, and by tempering this property is increased. The effect of air and moisture on bronze is to give it a greenish or olive hue, which rather improves the appearance of statues cast from this material. Bronze is slowly attacked by boiling hydro-chloric acid, and nitric acid dissolves it readily.

THE INGREDIENTS OF BRONZE

vary not only in character but in their proportion to each other. The main constituents are copper and tin, and different founders add other materials, lead, for instance, according to their own opinions. The standard of the Department of Parks, of New York, is 80 per cent. copper and 20 per cent. of anything else. The following proportions are those recommended by some experts:

	I.	II.	III.
Copper	96	89	87·25
Tin	4	8	9·75
Zinc		3	3·00
	100	100	100·00

The celebrated statue of Louis XV. is composed of the following proportions of metals:

Copper	82·45	Specific gravity 8·482.
Zinc	10·30	
Tin	4·10	
Lead	3·15	
	100·00	

The ancient Egyptians used two-thirds brass and one-third copper. The Grecian bronzes contained about the same proportions of ingredients, with the addition sometime of one-tenth lead and one-twentieth silver. Some of the antique bronzes were composed as follows:

	Per cent.
Copper	91
Tin	8
Lead	1
Zinc	⅛
	100⅛

A very wide variation is therefore noticeable in the constitution, even of the ancient bronzes. The addition of tin increases the fusibility of the alloy, although when added cold it is apt to make the copper pasty. If tin be added in proportions not greater than 2½ ounces to the pound, it does not greatly impair the red color of the copper. When the amount added is as much as six ounces, the alloy becomes of a grayish white color. At eight ounces it becomes quite white, and beyond this point the alloy has a grayish cast. If the bronze contains two ounces of tin to the pound it is scarcely malleable, and when the amount of tin is 2½ oz. the bronze is as hard as it is possible to make it without making it crystalline. If tin be added beyond this point the bronze begins to crumble under the file, and when the tin is greatly in excess it again becoms flexible. Where the finest castings are to be made the best Banca tin is employed. Where inferior work is to be done, old scrap tin, which often contains lead, is used.

THE PROCESS OF FOUNDING BRONZE

has altered materially from the methods formerly employed. It is always a difficult and nice operation, requiring long experience and judicious management. The method once employed was as follows: The molding sand was applied to the model and then taken off in pieces and put together without the model. Channels were then bored into the mold, through all of which the metal was simultaneously allowed to enter it. The casting when the mold was removed had small spines extending from it and corresponding to the channels in the sand through which the metal entered. These spines must be chiseled or sawed off and the protuberances remaining filed off and scraped. This gives to bronzes a very high value.

One of the old methods of casting bronzes is the following: The center of the mold was built up of rough materials such as brick, and this was covered with wax. The mold was then molded upon the exterior surface of the wax until the exact appearance of the desired statue or ornament was obtained. This was then covered with a mixture of horsedung, brick-dust, etc., and the whole mass baked for some time. The effect of this was to thoroughly harden the external coating, its internal surface having received the form of the wax mold, and to melt the wax which was thus entirely expelled. A space was thereby obtained between the core and the mold into which the metal was run.

In forming the best bronzes at the present day the materials are melted in plumbago crucibles. Some of the heaviest castings, however, are melted in reverberatory furnaces, but this is not the better plan, as it is desirable to keep the air away from the metal as much as possible during this part of the process, since the metals, copper and tin, are easily oxidized. The contents of the crucibles, also, must be stirred frequently, or else there will be considerable loss of copper and tin by oxidation, and zinc by volatilization. The total loss experienced during the melting process, is generally not more than one per cent. Another disadvantage in the oxidation of the tin is that it not only changes the proportions of the metals but introduces particles of oxide of tin, which do not combine with the remaining ingredients, but produce spots and stains on the surface of the casting. When melted, the materials are poured from the crucibles into a receiver, if the casting is a large one, and thence the metal is discharged into a mold. In

PREPARING THE MOLD

the model is first molded in potter's clay, and from this an impression is taken in plaster of Paris. A plaster model is made from this cast and then divided into several pieces. This model is then placed on a bed, and a mold of sand built over it. The mold is then taken to pieces and the plaster model having been removed, the sections of the mold are put together without the object. The mold is then set in a flask, and sand rammed into it, a sand core being thus formed which is the reproduction of the object itself. The mold is now taken to pieces again, leaving the sand core, which is then shaved down so as to leave a space between it and the metal of any desired thickness, say, three-eighths of an inch. As the exterior of this core determines the interior surface of the metal cast, it is only essential that the appearance of the model be approximately followed in this part of the operation. The core and mold are then thoroughly baked, and the latter is afteward built up again over the former. The mold thus prepared is then set in an iron flask and lowered into a pit. The receiver is then hoisted by a crane, and its bronze contents poured into the mold. For many points in the preceding description we are indebted to Mr. Maurice J. Power, proprietor of the National Fine Art Foundry, No. 216 E. 25th street, New York.

When the casting is completed the bronze must be cleansed, which is generally accomplished by washing it with a very dilute solution of oil of vitriol. The casting is then repaired, the core marks taken off and the bronze riffled over. Some founders sand paper their bronzes to produce a smooth appearance, but it is claimed that in artistic work this should never be done.

That peculiar kind of bronze work called galvanoplastique is produced by depositing a heavy coating of bronze by the galvanic process upon a plaster of paris model, and afterward removing the model.

The greenish or olive hue which bronzes acquire by age and exposure, known as

VERD ANTIQUE,

is very much prized by connoisseurs, and there are various washes used to develop the color at once. The different shades of *verd antique* depend upon the nature of the wash used. The following recipe can be used with very good results. Two drachms of sal-ammoniac, and one-half a drachm of binoxalate of potash are dissolved in fourteen ounces of colorless vinegar. The solution is applied with a hot pencil in a very thin layer, the object having been previously warmed gently, and the operation is repeated until the desired color is produced.

There are various other treatments applied to bronze in order to obtain the many shades of color necessary to suit the varied tastes of the community. Coloring is also applied to give an uniformity of appearance to the bronze which, when it first comes from the mold, often presents an irregular appearance as regards shade and color. Another object to be attained by this treatment is to vary the light and shade in the different parts of the surface. Thus, where a fold in drapery is represented, it is necessary to give quite a dark appearance to those parts which would be naturally shaded.

British estimates show that Russia will require to import nearly 90,000 tons of rails and accessories during the present year, and about 130,000 tons during the year 1874. These totals are arrived at from the following premises: The Russian system of railways extends at present over 14,000 kilometres, and at the end of the year 1874 will reach 18,000 kilometres. Russian engineers consider that the annual renewal of rails amounts to 15 per cent. of the whole; but allowing only 12 per cent., and taking 80 tons as representing the weight of rails and accessories for one kilometre, this will give 140,000 tons for 1873 and 180,000 tons for 1874. Toward this Russia will probably supply 50,000 tons per annum, viz.: The Demidoff Works, 6500 tons; the Railway Society's Works at St. Petersburg, 4000 tons; and the Pontiloff Works, 38,000 to 40,000 tons—leaving 90,000 and 130,000 tons, respectively, to be obtained from abroad during the next eighteen months. In addition to the above, the construction of the 1000 kilometres of new lines will require imports amounting to 320,000 tons of rails and accessories.

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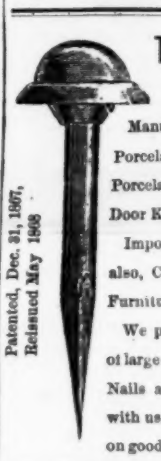

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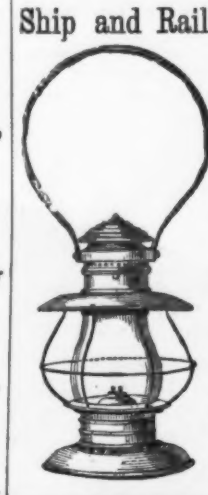

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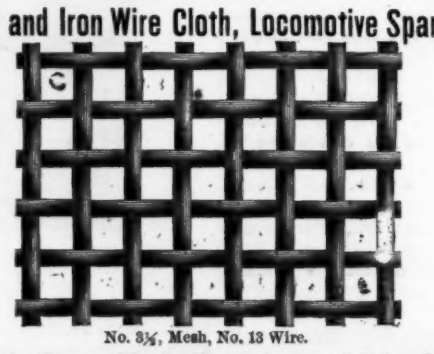

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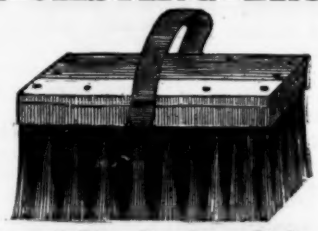

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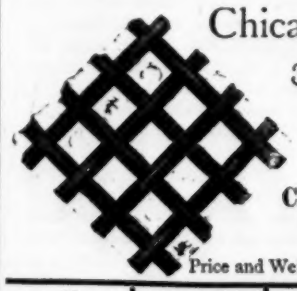

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10	3.47	40	11	3.20	38	12	2.80	35	14	2.43	33	16	2.00	30	18	1.39	30
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12	2.10	26	13	1.85	25	14	1.62	25	16	1.51	25	18	1.11	20	20	0.76	20
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The Cyfarthfa Iron Works.

The *Practical Magazine* publishes an interesting account of Mr. Crawshay's iron works, at Cyfarthfa, Wales, from which we take the following:

"I had heard a great deal of the somewhat peculiar condition of things at the Cyfarthfa Works; I had even heard the term 'paternal relation' of the employers toward the employed at Cyfarthfa, and intended to give the matter a detailed examination. The Cyfarthfa Works are by no means so large as the Dowlais, but they are larger than the Plymouth, and are very accessible, being hardly a mile from the town. They employ altogether—men, women and children—close upon 5000 people. I suppose that at the present time it would unquestionably be more profitable to the owners to sell the coal at the present enormous prices than to use it up for iron. The profits on coal are enormous, if the profits really come to the owners; but iron shows extremely little profit. The plant, however, being in existence, the traditions of the firm having to be maintained, some sort of vested interest being allowed to the employed, some hope of better times being indulged, the ironworks at Cyfarthfa are continued, and probably would be even with a positive margin of loss. Some coal is sent from Cyfarthfa, but iron mainly. There is certainly a sort of ancestral and patriarchal feeling at Cyfarthfa which hardly exists elsewhere.

"There are many men who have grown gray in the employment of the Crawshays, who have never changed or would wish to change their place. They have begun as children, perhaps only fetching and carrying small articles, for a few shillings a week, and have gone on to earn, as firemen and puddlers, their three pounds. There is not the same intense pressure to produce here as in other districts. The owner, having inherited 'a few loose millions,' can afford to take things considerately and calmly. If you take the manager of a company, with his five thousand a year salary, and wanting to make another five thousand a year by his commission and percentage, you have of course a very different set of circumstances; he is anxious to produce as fast as possible; but the owner of Cyfarthfa is reported to have once truly said, that he could afford to shut up his works for fifty years. The Crawshays have always shown a strong individualism of their own, as thoroughly able and independent, straightforward and liberal men. Bishop Watson, an absentee bishop, who only came into his diocese once in three years, in his curious 'Anecdotes of his Times,' says, 'I went over the mountains from Nearth to a place where no bishop had ever held a confirmation before, Merthyr Tydvil." I was, whilst there, hospitably entertained and lodged by Mr. Crawshay, one of the most intelligent and opulent iron masters in Europe.' He goes on to relate that Mr. Crawshay said that there would always be three or four thousand pounds at his service if he happened to want them. It was a greater civility than the absentee prelate deserved. At the pits and works Crawshay follows Crawshay. 'An Amurath to an Amurath succeeds.' Mr. Richard Crawshay, in 1847, when entertained at dinner by the people of Merthyr, gave an account of the rise of his family of 'iron kings.' 'My grandfather was the son of a most respectable farmer in Normantown, Yorkshire. At the age of fifteen father and son differed. My grandfather, an enterprising boy, rode his own pony to London, then an arduous task of some fifteen or twenty days' traveling. On getting there he found himself perfectly destitute of friends. He sold his pony for £15; and during the time that the proceeds of the pony kept him he found employment in an iron warehouse in London, kept by Mr. Bicklewill. He hired himself for three years for £15, the price of the pony. His occupation was to clean the counting-house, to put the desks in order, and to do anything else that he was told. By industry, integrity and perseverance he gained his master's favor, and was termed 'The Yorkshire Boy.' He had a very amiable and good master, and before he had been two years in his place stood high in his master's confidence. The trade in which he was engaged was only a cast iron warehouse; and his master assigned to him, the Yorkshire Boy, the privilege of selling flat irons—the things with which our shirts and clothes are flattened. The washerwomen of London were sharp folk, and when they bought one flat iron they stole two. Mr. Bicklewill thought that the best person to cope with them would be a man working for his own interest, and a Yorkshireman at the same time. This was the first matter of trading that ever my grandfather embarked in. By honesty and perseverance he continued to grow in favor. His master retired in a few years and left my grandfather in possession of his cast iron business in London, which was carried on on the very site where he ended his days in York road. My grandfather left his business in London and came down here; and my father, who carried it on, supplied him with money almost as fast as he spent it here, but not quite so fast. What occurred subsequently this company knows perfectly well. Who started with humbler prospects in life than my grandfather? No man in this room is so poor that he cannot command £15. Depend upon it that any man who is industrious, honest and persevering, will be respected in any class of life he may move in. Do you think, gentlemen, there is a man in England prouder than I am? What is all the world to me unless they know me?' I was certainly somewhat disappointed with my experience of the Castle. It is a somewhat imposing structure of gray stone, but by no means so extensive as I had been informed. I had heard a story at a London club of the elder Crawshay, now 'gone over to the majority.' He had asked for some carpeting at a West-end shop, but had not been satisfied with what he had seen. The shopman began to look with a little contempt at the homely figure before him. 'I suppose,' he said at last, 'that what you really want is some remnants.' 'They must be biggish remnants," quietly answered he of Cyfarthfa, to the astonished shopman, 'to cover seven acres.' The story is *ben trovato*, so good as to be good for nothing. The castle edifice stands upon about half an acre of ground. The grounds are large, the gardens extremely good, the park somewhat extensive, without deer, but with plantations well preserved with game. It is quite unlike any castle that I have ever seen or stayed at. It has a stern, utilitarian character, peculiarly its own; the lodge gates facing the grimy lane that goes down to the grimy works. Coming out on the terrace, the unique character of the stern rough place, fit residence for an iron king, impresses you strongly. Some iron rails, a kind of tramway, came almost to the front door, The place might be a fortress, a mill, a lunatic asylum, unless you know to the contrary. A somewhat steep ascent leads you to the gardens behind the house, with conservatories and ferneries. Some of the hothouses are very rich in their contents. The flowers might be the glory of any conservatory; but even in looking at the flowers you could not get rid of the idea of iron and coal."

The estimate of the number of workmen is, I may just mention, under the mark, there are in reality over 6000 men employed in the iron works of the firm, beside the colliers and miners.

The Progress of Persia.

A special correspondent of the London *Times*, writing from Teheran, says: Of course the great topic here is the "Concession," and what will result from it. The details of the "Act" have already appeared in your columns, so I will not touch upon them. Mr. Collins and a party of engineers arrived in Persia some three months ago, and have been everywhere well received. At Tabriz, the capital of Azer-bijan, the richest and most civilized province in Persia, they were granted an audience by the governor, who is the heir apparent to the throne. He informed him that Baron Reuter would have the cordial support of the Shah, and that his "scheme" had created the liveliest interest among all classes, and was looked upon very favorably. In every country there is a party opposed to change of any sort, and Persia is no exception. The Mollahs, or priests, have pronounced against the "Concession," but this is of small moment, for their influence has been some time on the wane, and will probably be further diminished by the European experiences this summer of the Shah and his ministers.

The inquiries, observations, and surveys already made by the pioneer party, have evidently been of the most satisfactory nature, for Baron Reuter has ordered the proposed railway between Teheran and Resht to be commenced at once, although the line has not been completely surveyed. This seems to show that he is determined that this work shall be done at any cost, and done quickly, though no great difficulties or obstacles are anticipated. A camp of engineers and workmen has been formed at Resht, under the superintendence of Mr. Macnain, M. I. C. E., who has had many years' experience of Indian railways, and I believe I am correct in stating that the plant has already left England, and that the laying of the plates will be commenced by the end of this year. This line will be followed, I understand, by far more extended operations, to the south of Teheran, viz: to Ispahan, and from there to the Persian Gulf, and, perhaps, also to the Turkish frontier, the former opening up a direct line to India, and the latter, if the Turkish government and the Baron's company could be got to work together, a direct line to the Mediterranean.

There is one great evil in Persia, to the removal of which the earliest attention ought to be paid. There are no banks in the country, and no regular means of transferring money from one place to another. This is more particularly felt here on account of the coinage. Nominally there are two gold coins, called toman, 8/4., and half toman, 4/2; but they are never used. The coins that are in circulation are kiran, 10d., and half and quarter kiran; these are all silver. The Persian who can save a few kirans either buries them in the ground, or, if of a more speculative turn of mind, lends them to his poorer neighbors, getting at least 120 per cent. interest, and this on good tangible security. This, I am assured, is the regular rate paid. Of course, these evils would be remedied by a sound system of banking and a revised coinage.

The collection of the customs is to be handed over to Baron Reuter on the 21st of March next. Whether this branch of the "Concession" will prove a lucrative one or not is hard to say, but it is well known that, as at present administered, there is a total absence of system, of recognized laws or just regulations regarding the customs. The prevailing idea is that the revenue obtained from them but little more than covers the expense of their collection, but this can be accounted for by the smuggling which is known to be carried on wholesale by means of bribery.

Another very important part of the Baron's scheme, I hear, is "irrigation." The soil of Persia is undoubtedly very fertile, provided a fair water supply can be insured. Thousands of acres are at present simply desert for the want of it. Though the rain fall is not great in the plains, yet on the mountains the rain and the melting of the snow are so considerable that an immense quantity of water (and this is manifest from the water courses one meets with in every direction) flows down to the plains, and is there lost and wasted, if not before, at least as soon, as it reaches the great salt desert, about twenty miles from Teheran. This applies with even greater force to other parts of the country. This water, if pent up in reservoirs, which many writers think could be easily constructed, would not only be sufficient for the better irrigation of land already under cultivation, but would also be the means of recovering immense tracts of what is now a desert. The soil is well adapted for the growth of silk, cotton and opium, but these at present are not grown in sufficient quantities to meet the native demand. Mr. Watson, in his book on Persia, propounds the notion of planting the slopes on the southern side of the Elburz, for the purpose of attracting moisture. Why should not this be done?

It may fairly be assumed to be an established fact, from the numerous reports which have been made from time to time by competent persons, notably Mr. Eastwick, on the mineral wealth of this country, that there are rich mines of coal, copper, iron and lead, not only in Azer-bijan and Mazanderan, but in other parts of Persia, which have up till now remained entirely, or almost entirely, undeveloped. Doubtless, steps will be taken without delay to test the value of these mines, for when steam communication is made between the Caspian and Persian Gulf, and possibly the Mediterranean, should they turn out as is expected, the produce of them, conveyed quickly and at a moderate cost, not only through the country, but to Europe and India, would prove a great source of wealth to the company that works them, and to Persia generally.

Aluminum as a Material for Balloons.

A writer in the *Journal of Commerce* makes a suggestion which, even if not original, merits attention:

Before dismissing "The Balloon" to the limbo of old sensations, it is worth while to inquire whether some material for the making of aerostats could not be found better than the fabrics commonly used. The objections to silk or cotton are these—that, no matter how carefully varnished or oiled, they permit the escape of gas; that they are not strong enough to resist the pressure of the gas, when made beyond a certain size; that they are easily torn; that they absorb moisture when passing through clouds, fog or rain, necessitating the sacrifice of ballast in order to rise into sunshine, and then, as they rapidly dry, requiring the release of gas in order to check their upward flight. With silk or cotton balloons there is a constant alternation of pitching out ballast and letting off gas. Consequently, it is indispensable to put a large surplus of gas in the balloon, and also to take a large amount of ballast, or spare weight, of some kind. One of the most serious obstacles to voyaging over the Atlantic in a balloon—to say nothing here of hitting and keeping an easterly wind—is the steady, inevitable loss of gas that occurs.

If this problem of transatlantic ballooning is to be seriously attacked, the first and indispensable thing is to make a balloon free from all the objections we have mentioned. We suggest that the (comparatively) new metal, aluminum, may be found to meet the want. Its specific gravity is about one-eighth of that of gold, a fourth of silver, and less than a third of copper. It weighs less than common glass, and but little over twice as much as sea-water. Lightness is but one of the good qualities of this extraordinary metal. It is malleable like gold, and may be hammered or rolled out in sheets of extreme tenuity; and yet it is stronger and more tenacious than iron itself. Furthermore, it resists the oxidizing influence of the atmosphere. It does not rust or corrode under any circumstances, and is proof against the most biting acids in the cold. Our purpose here is but to throw out the hint; those particularly interested in aeronautics can follow it up if they like. But there seems to be no good reason (unless the one of expense) why a balloon, or at least the upper and more exposed half, could not be successfully made from aluminum. It would not leak; it would not tear; it would last forever, barring accidents in landing, and then, if injured, it could be easily repaired. There would be some mechanical advantages in the use of a metal balloon. The valve at the top could be more accurately fitted and worked than it is at present, and automatic safety valves could be provided to relieve the balloon from too great a pressure, also gauges to mark the pressure during the process of filling. These are incidental considerations. The chief object gained is the saving of gas, and if gas can be saved up, then it is not necessary to make a very large balloon or to take along a great dead weight of ballast. With an aluminum envelope above him, the aeronaut might float about for weeks or months. It would be an advantage with this form of balloon, more than any other, to use pure hydrogen, which is considerably lighter than the street gas. Assuming, as we do, that it is possible to make a balloon of aluminum by rolling that tenacious metal down to the proper thinness, the question of expense comes into play. There is no aluminum made in this country, and none seen here save in the form of delicate balances, mathematical instruments, bronzes and ornaments. The crude article has no quoted market price in England or France, which are the chief places of manufacture. The metal is produced on a small scale now, the demand being limited, and the price is necessarily higher than that of copper or tin. It was reported some time ago that, by a new method, the cost of manufacture had been greatly cheapened, and that aluminum would soon be taking the place of other metals for some of the commonest uses. Its source of supply is unlimited. All varieties of clay contain it in abundance. It is one of the most widely distributed of the elements, though never found in a native state, but always as a carbonate or silicate, or in some other compound condition. At present prices it might be too costly for use in the quantity required for a balloon; though, as it is indestructible, there would be true economy in using it for repeated aeronautic exhibitions. If anybody to whom money is no object has his mind bent on making an air trip to Europe, he would do well to look into this subject of an aluminum balloon before committing himself too far to the hazardous enterprise.

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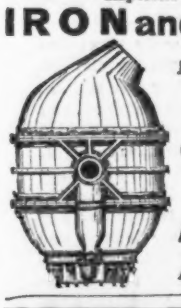
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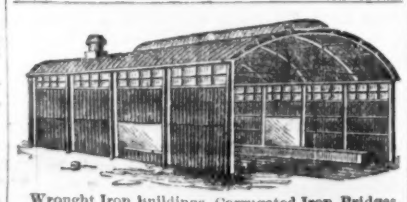
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The Church Bells of Cornwall.

BY E. H. W. DUNKIN.

The first distinct trace of the existence of bells in England, such as now occupy the towers of our churches, is found in the tenth century. On one of the illuminations in St. Æthelwold's *Benedictional*, a manuscript which was executed at that period, appears an open campanile, in which four bells are suspended, one being placed above the others. This shows that peals of bells were already in use, and it is not improbable that their introduction really took place some two or three centuries earlier, soon after the mission of St. Augustine. But Ingulph, in his "History of Croyland Abbey," gives further testimony that peals of bells were in use in the tenth century. Speaking of the additions made to the abbey when Egelric the Elder was abbot, he describes the formation of a peal by the addition of six bells to the then existing large one. Egelric "had also two large bells made, which he called Bartholomew and Bettelm; also two of middle size, which he called Tuketul and Tatwin; and two small ones to which he gave the names of Pega and Bega. The Lord Abbot Tuketul had previously had one very large bell made named Guthlac, and when it was rung with the bells before named, an exquisite harmony was produced thereby; nor was there such a peal in all England." This must have occured before 984, in which year Egelric died. It is not unlikely that, from this time, the number of bells throughout the country gradually increased, and when heavy peals were more generally introduced, towers of the necessary strength and proportion were built to receive them.

Bells had found their way into the Continental churches, and their use had been sanctioned, before the tenth century. I refer, of course, to bells of large size, in contradistinction to those of a smaller class, which were not unknown to classic nations. The date of their invention is, however, uncertain. It is said that the sanction of the Church to the use of bells was given by Sabinianus, the successor to Pope Gregory the Great. And that they were invented in the sixth century, but other accounts place the date still earlier. Certain it is, however, that bells of large size had been cast early in the seventh century. We learn this from what took place at Sens in 610. It is related that when King Clothaire besieged that city, his army was frightened at the sound produced by the ringing of the large bell at St. Stephen's church. This anecdote farther shows that bells were not then widely known, or the army would not have been terrified at the sound.

It would appear that there is no bell at the present time in this country which was cast prior to the Norman conquest. In a document of the twelfth century is recorded the removal of a bell from the abbey of Byland, Yorkshire, to a chapel at Scawton; but though there is still a very old bell at this place, which some have supposed to be the identical one referred to, it is doubtful whether it can really claim such antiquity. In Leak Church, in the same county, there is also a bell which may be as old as the twelfth century, but here, as in many other instances, absolute certainty cannot be arrived at, in consequence of the practice of the early bell founders seldom to put a date on their bells. Indeed, very few pre-Reformation bells have dates on them; it is after the sixteenth century that dates become the rule, not the exception.

Fortunately, however, two or three bells have been discovered in remote parishes that possess not only an early form of lettering, but also a date which corresponds with the style of the characters. The oldest bell of this kind at present known is at Claughton, in the hundred of Lonsdale, Lancashire. The antiquity of this bell was unknown till 1853, when its age was ascertained by the Rev. W. B. Grenside, then curate of the parish. It is dated 1296, and is about 26 inches in diameter. It is inscribed with the date only, thus:

+ ANNODNI M° CC° NONOG° AI°

the V being turned upside down.

There is also a bell at Cold Ashby, Northamptonshire, cast in 1316, the existence of which has recently been pointed out by the Rev. H. T. Ellacombe. Lastly, there is the foreign bell at Duncton, Sussex, which was formerly considered to be the oldest dated bell in England, having been cast at the Hague as early as 1369.

On the Continent there are dated bells older than any of these. At Ingenobach, by Hengersberg, Lower Bavaria, hangs one which distinctly states it was cast in 1144. At Fontenailles, near Bayeux, France, there was formerly a bell dated 1202, which on being cracked, was removed, about 15 years ago, to the museum at Bayeux, where it is still preserved. Bells dated 1258 are at Friburg, in the Black Forrest. One on the top of the leaning tower at Pisa is dated 1262.

Cornwall does not possess any bell which can possibly be assigned to a period so remote as those above named. There is a tradition that the ancient chapel of St. Enodock, in the parish of St. Minver, had, until the middle of the last century, a bell inscribed with the name "Alfredus Rex," and commonly believed to have been the gift of that monarch. It was sold to defray the expenses of repairing the chapel, and in all probability was broken up.

Ancient bells deserve careful preservation on account of their rarity. This rarity is apparent in Cornwall, as well as in other countries, where the bells have undergone a systematic examination. Out of an aggregate of 872 bells in the entire county, there are not more than 52 that belong to a period prior to the Reformation. This scarceness is due, no doubt, to a combination of causes, such as ordinary wear and tear, wilful breaking, spoliations, and the recasting of whole peals to adapt them for change ringing, though this recasting, which is more noticeable in the eastern than in the western half of the county, has probably been the chief cause.

The dissolution of the monasteries led to some of the bells of Cornwall being broken up and sold, but the great majority remained. As an illustration of how the bells were dispersed, we may refer to a document found in the parish chest of Lanivet, from which it appears that four of the largest bells of the Priory of Bodmin were purchased for £36. 13/4. The same is reported of the bells formerly in the north tower of St. Germans' church, which are said to have been divided among the neighboring parishes, but I am not aware of any documentary evidence in proof of this.

It is commonly believed that a great spoilation of bells took place throughout the county in the reign of Edward VI. But the general tenor of the evidence, which may be gathered from the church inventories of that period, shows that the bells were not removed. The error probably originated with Strype, who says that Protector Somerset is generally charged for the great spoils of churches and chapels and pulling down the bells in parish churches, ordering only one bell in a steeple; and this statement has been blindly repeated by many subsequent writers.

Though there are no just grounds for believing that any general confiscation of bells took place at the instigation of Somerset, it is certain that some districts were threatened with the removal of their bells as a punishment for the disloyalty of the inhabitants to the king. This action may have given rise to the charge noted by Strype. Cornwall and Devon were among the districts thus threatened, for an order was issued, in September, 1549, authorizing the removal of all the bells in those counties, except the smallest of each peal. The people, it should be remembered, had taken up arms in support of Arundel's rebellion, and the bells had been rung to call the insurgents together. Hence the issue of the order in question.

Had this order been carried strictly into execution there would have been very serious havoc in the Cornish belfries. There is every reason to believe, however, that it never took effect, and that the bells remained as before.

Twenty years later some of the bells in the northern counties were ordered to be removed, as a punishment for rebellion. This appears, from a memorial of proceedings, to be adopted in the northern counties, wherein it is stated that "wherever any bells were rung to raise rebellion, only one bell is to be left in the steeple in memory thereof."

It appears that the usual number of bells for a church, in Cornwall, in the time of Edward VI, was either three or four. Very few towers had a less supply. In the hundreds of Kerrier, Powder, West, Trigg, Lesnewth and Stratton, there were 382 bells in 118 churches and chapels, not including two or three sacring bells, and some styled "loose belles." The three bells at St. Mewan, near St. Austell, are said to have weighed 30 cwt., while two bells at Cornelly only weighed 1½ cwt.

I now proceed to make a few remarks, as concise as possible, on the present condition of the church bells and belfries of Cornwall.

The church towers throughout Cornwall are generally built of granite, are lofty, and seem to rise in defiance of the storms, but they are for the most part plain (Probus, St. Austell and Launceston towers are exceptions to this remark); their beauty consists more in elegance of proportion than in richness of ornament. The staircase is generally within the tower. There is a class, however, which have a staircase turret at one of the angles, rising from the other pinnacles, and finished with a little spire. Some few churches have, instead of a tower, a stone spire. In such cases there is no access to the belfry, except by means of a ladder. A few of the Cornish churches have no tower whatever, and the bells are then hung in a detached belfry or campanile in the churchyard. These campaniles are generally low structures, built evidently with no other object than that of affording accommodation for the bells.

The word belfry has been used by writers in a variety of significations, though it ought to be strictly applied only to the chamber in the tower, in which the bells are actually placed. Access to these bell chambers is not difficult whenever there are newel staircases, but in many cases the ascent must be made by climbing one or more ladders, occasionally old and rotten.

The belfries, as a rule, seldom present a very cleanly aspect, but this might be expected from their exposed situation. Some are in a very bad condition, strewn with broken bells and rubbish, and entirely uncared for. This is especially to be noticed in a few small belfries which contain only three bells. The want of attention on the part of the parish authorities thus shown is not confined to Cornwall, but exists more or less all over the country.

There are now many ways that bells get cracked and broken; one of the most common arises from what is known as "clocking." This consists in tying the bell rope to the flight of the clapper, and pulling the clapper toward the bell, instead of the bell toward the clapper. This mode of easing the tolling of a bell is a very favorite one with Cornish sextons, and, indeed, with sextons generally. It appears to be an ancient practice, for the same was forbidden by the vicar of St. Lawrence, Reading, in the 16th century.

"MICHÆLMAS, 1594."

"Whereas there was, through the slothfulness of the sexton in times past, a kind of toling ye bell by ye clapper rope; yt was not forbidden, and taken awaye: and that the bell should be toled as in time past, and not in anni such idle sorte."

A process more dangerous could scarcely be devised, for not only do the staples in which the clappers work get injured, but, worst of all, the bells crack. Let us see what Mr. E. B. Denison says about "clocking." "Wherever the bells are occasionally 'clappered,' care should be taken to put separate pulleys in front of the middle of each bell, with a separate and thinner rope to the clapper, the whole being so arranged that the ringer cannot hold the clapper against the bell; for I believe more bells are cracked by tying the ropes to the clappers than by all other means together. All the extra pulleys and clapper ropes will not cost so much as re-casting the smallest bell in the peal, if it is cracked, and it is generally not the small bells, but the large ones, that get cracked first."

These words of warning ought to be sufficient to deter the parish authorities from allowing the wheels, and other bell gear under their care, to get rotten and unfit for use, for with the wheels and clappers in good order, there can be no excuse for the bells being ever tolled for service by "clocking."

A goodly number of bells in Cornwall have been broken in a very rash and quite inexcusable manner. I refer to cases in which the bells have been struck at ramdom with heavy hammers to make them sound, by semi-inebriated guests from a wedding feast who have obtained access to the belfry. There are probably more bells injured in this way than any one would imagine.

Wherever practical campanology is encouraged in Cornwall, the bells are in good condition. Peals of eight exist at Stokeclimsland, Bodmin, Fowey, St. Austell, St. Columb, Kenwyn, and Penzance. Many belfries contain peals of six, and in nearly every tower there is room for three bells, though they are not always in ringing order. Three bells in olden times, as now, was a very favorite number for a country church.

Some general remarks may be added, on the laws enacted at various periods against the importation and exportation of bells and bell metal.

In the reign of Edward IV., the importation of sacring bells, "ready wrought," was prohibited, and a similar statue was passed in the short reign of Richard III. After the Reformation, when sacring bells were no longer required, these Acts fell into disuse, and we find that bells were not included in a statute of 5 Elizabeth, of which the importation of manufactured articles in metal was forbidden.

But from the time of Henry VIII. the laws against the exportation of bells and bell metal were in full force. By an Act passed in the 21st year of that reign, it was enacted that "noe pson. or psons. shoulde from thenceforthe carrye or convey any brasse, copper, laten, bell mettall, gun mettall, ne shrofle mettall, into anye part or parts beyond the sea, upon payne of forfeyture of the said mettall." In the 33d Henry VIII. bells and bell metals having become so plentiful in the market, owing to the dissolution of the monastic establishments and the dispersion of their peals, a more stringent Act was passed, which declared it illegal to carry any of the above metals "beyonde the sea, or into anye outward realm or dominion whatsoever it be, upon payne to forfeyt the double value of the same metall so carried and conveyed."

Bell metal still being exported, notwithstanding the attendant risk, in 2nd and 3rd Edward VI. the penalty was again increased. Neither this nor the former Acts were repealed until 53rd George III., although, as a petition to carry a bell to Barbadoes, dated October 31, 1694, expresses it, "the reason upon wch they are grounded seems obsolete." The chief object in framing these statutes seems to have been to prevent the metal being purchased for warlike purposes by foreign nations—a matter of policy no doubt, considering that bell metal was of a similar composition to that used for cannon and other engines of war.

The Mineral Resources of Australia, New Zealand and the Cape.

The extraordinary rapidity with which Australia and New Zealand have risen in moral and material advancement, is all the more astonishing when we come to consider that, in reality, Australia, for all practical purposes, was discovered but a little over a century ago, Captain Cook having landed there only in 1770. Up to within twenty years ago, the mineral resources of Australia were little known to colonists, they being almost exclusively devoted to sheep raising and agriculture. The gold fever, in 1853, attracted thither metallurgists from all quarters of the globe, and not a year has passed since without some important discovery in mineralogy. On reviewing recent official reports, we shall be able to present the vast field there opened to industry and trade in a condensed shape.

New South Wales.—Among its many universal resources, coal ranks prominently. Its deposits are both extensive and inexhaustible; thus, in 1869, there were 33 mines in operation, producing, during the year, 919,773 tons, representing a value of £346,145. Near Bathurst the deposits of kerosene slate produced 7509 tons of kerosene, valued £18,750, during the same year. Kaolin, meerschaum and plumbago were simultaneously discovered. Copper ore abounds between the 149° and 150°. Silver has been found at Moraya and other places. Iron abounds nearly everywhere, but high wages prevent its working. The export of gold from 1851 to the end of 1868 amounted to 8,162,481 ounces. The year 1869 showed a production of 224,382 ounces, equal to £866,746.

Victoria.—The mineral riches of the colony are as extensive as they are varied. Rich in copper ore, we find the country surrounding St. Arnand, Castlemaine, on the Thompson River, where solid, pure copper is found; silver in abundance at St. Arnand; tin in the Beechwork district, on the tributaries of the Yarra, Thompson and Latrobe rivers, as well as near Faradale and Strathbogie; antimony at Heathcote, Ulhroo, Anderson's Creek, Ruthergien, Maryboro and MacIvor; spelter at Dayles Ford; lead at Mount Grenock, and iron in many localities. The alluvial gold fields are now, in a great measure, exhausted at the surface, and shafts are now sunk to the depth of from 300 to 500 feet. Both the alluvial and quartz mines are now worked with the greatest scientific appliances. There were occupied as miners in 1869, 27,062 Europeans in alluvial mining, and 16,690 in quartz; 15,915 Chinese in alluvial, and 135 in quartz mining. Of steam engines, 404, with 9707 horse-power, were at work in the alluvian, and 713, with 13,423, in quartz; this machinery was valued at £2,163,920. The gold fields in active operation were 905¼ square miles; the number of auriferous quartz veins was 3941. Up to the end of 1868, the colony had exported £147,322,767 of gold, and in 1869 alone, £5,563,759. The first gold at Ballarat was discovered in 1851.

South Australia.—Traversing the Continent from the north to the south might more appropriately be termed Central Australia, and is as rich in copper as Victoria is in gold. In 1867 fifty copper mines were in full blast. Bismuth and lead are also extensively mined. Gold and silver have been quite recently discovered at Echunga, 23 miles from Adelaide, in the Barber Mountains. The general belief of geologists seems to be that a more thorough prospecting of the colony will disclose the most varied mineral resources.

West Australia.—Lead is the main mineral product of this colony, and the Geraldine Works produce annually 800 tons of lead ore of an 80 per cent. test. Copper has been traced over an expanse of surface of no less than 5000 square miles. Iron is on hand in stores virtually inexhaustible.

Queensland.—The leading metals of the colony are gold and copper, and coal is also extensively mined. The amount of gold product in 1869 was 122,712 ounces, worth £429,907; 9033 tons copper, worth £750,000; and coal, 19,611 tons, worth £11,519. In May, 1870, a nugget of gold was found in the colony weighing 166 ounces.

Van Diemen's Land (Tasmania).—The Island was almost depopulated upon the discovery of gold on the mainland, but gold has been discovered since, and coal is as abundant in proportion as it is on the continent.

New Zealand.—The greatest activity reigns in the gold regions of the colony, and as quartz predominates, they are likely to go on yielding for a generation or more to come. Thus on the Thames River (North Island) the gold fields extend in length nearly 100 miles. The gold fields in the Canterbury Province (Middle Island) are also quite extensive, but communication being defective as yet, they can be reached from the coast only. Those of the Province of Otago cover the vast expanse of 2,500,000 acres. New fields were discovered near Invercargill, at the southermost point of Middle Island.

The Cape Colony.—In this colony we find great abundance of copper in Little Namagualand. Thus, Port Nolloth has been steadily exporting, of late, 3000 tons of copper ore, and is deemed in its infancy in point of productiveness under this head. Dunn, the government geologist, declares the copper mines of Little Namagualand to be as rich and valuable as the gold mines of Victoria. The greatest difficulty to be overcome has been the transportation of ore over a rough sort of a road, 85 miles in length, to Port Nolloth, sandy and rocky. Mules had to do the work, but frequent drouth rendered them a precarious property, and rails are now being laid by the Ookiep Works, which shipped to Europe in 1871 no less than 10,000 tons of copper ore. The Concordia mines had 2000 miners at work last year. All that is wanted is coal and ease of transportation, and production may be indefinitely extended. One copper vein of considerable strength has an unbroken length of two miles. Two hundred years ago work was commenced on this mine, but nothing would pay at the time but pure copper, and it was abandoned.

The foregoing summary of mineral resources will suffice to show that they are not exceeded by any other country, not to speak of the diamond fields of the Cape, and that eventually their full development will assist in checking the rising tendency observable of late years in the value of copper, tin, spelter and lead.

A Collossal Bronze.

A correspondent of the Baltimore *American* tells the following large story about the great Munich bronze figure of Bavaria, of which we have previously spoken in these columns:

This wonderful statue, which we had only seen from a distance, is still more wonderful on a close inspection. We drove out in the cool of the morning, yesterday, before the sun had concentrated its rays on the burnished metal and thoroughly explored it. A winding iron staircase passes up through the white marble pedestal, and continues on through the body of the statue, the whole number of the steps being about 130, one-half of which are through the pedestal, and the balance through the internal portion of the statue. The stairs are narrow, only large enough for one person to go abreast, but until the waist of the figure is reached the banister on each side is fully four feet from the outer metal. A gentleman and lady had passed up before us, and when we reached the head they were seated side by side in one of the cheeks, leaving room enough for four more inside of the capacious head. We looked out of her eyes on Munich and the mountains, and also, by standing erect, through a hole about as large as a man's hand at the base of her waterfall, or twist of hair. To do this the reader will please to understand that we had to stand erect inside of the head, and rise on tiptoe. It was too hot at this early hour to remain long, especially as we heard some more visitors coming up, and concluded to beat a hasty retreat. At the foot of Bavaria a lion is sitting, and on the inside both the lion and the dress of the figure forms one cavity. The appearance of this statue as it is approached across a broad meadow, with the large white colonnade in the rear and sides of it, is that of a magnificently formed giantess, with her right arm extended over her head, holding a wreath. The idea that the figure itself is sixty feet high from the heel to the crown of the head seems preposterous, and that it is possible for six persons to enter the cavity of the head at one time, you feel disposed to doubt. However, we thoroughly tested it, and although there were four of us in at one time, we assure the reader that there was abundant room for two more ordinarily sized mortals to be comfortably seated. It stands on the summit of a hill, and sixty broad marble steps have to be mounted to reach the level on which the pedestal and the marble temple stands. The wreath in the hand of Bavaria is, therefore, nearly two hundred feet above the level of the surrounding country.

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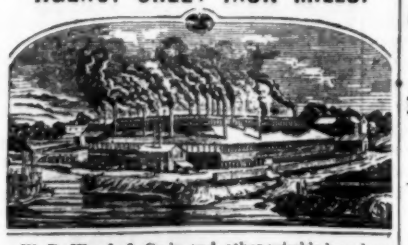
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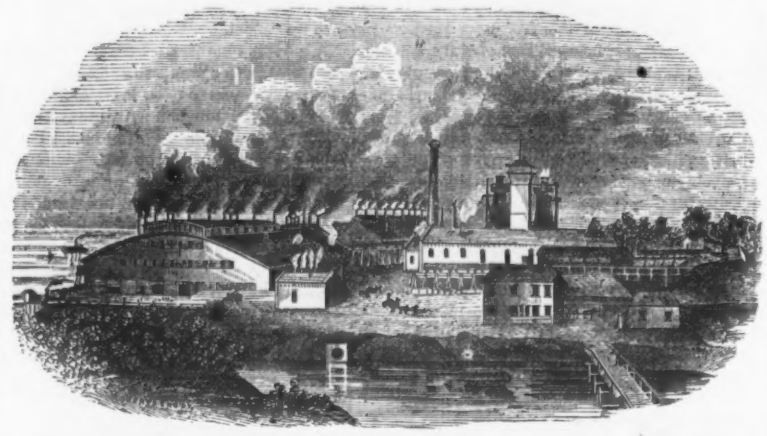
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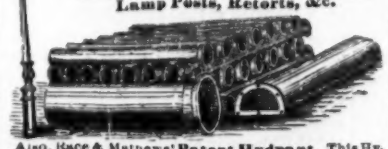
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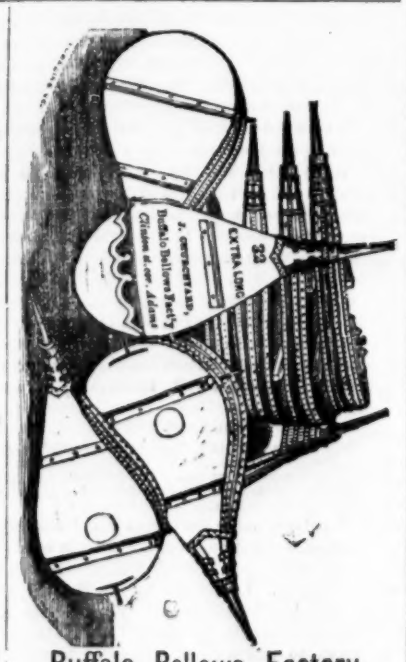

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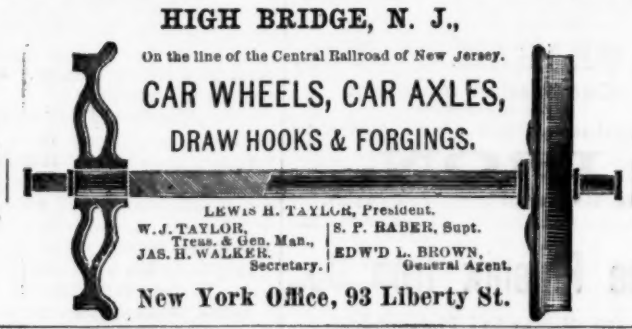
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New Patents.

We take from the records of the patent office at Washington the following specifications of certain patents lately issued, which will be found interesting:

IMPROVEMENT IN TREATING BESSEMER STEEL AND OTHER METALS TO ANNEAL THEM FOR PUNCHING, &c.

Specification forming part of Letters Patent No. 140,759, dated July 15, 1873, issued to George W. Billings, of Chicago, Ill.:

Figure 1 is an outside view of device. Fig. 2 is a transverse longitudinal section.

The nature of this improvement relates to the employment of steam by any suitable appliances for the purpose of rendering more amiable Bessemer steel, and other steels and iron, so that such metals may be punched, drilled, upset, swaged, &c., for the various purposes required in the arts and manufactures.

To avoid the oxidation of the metal by furnace heat and change in its character, and at the same time render it amiable so as to be conveniently and easily worked, a jet of steam

Fig 1.

DEVICE FOR ANNEALING METALS.

—say, about 300°, more or less, according to the nature of the steel—is caused to impinge upon the point or place to be punched or swaged without heating the entire article, as must be the case when the article is subjected to furnace heat. The employment of steam for rendering steel and iron more pliable in working acts also as a lubricator on the dies, punches, and other tools.

The hard and intractable character of many kinds of steel is well known to be a serious objection to working them cold; but by the action of steam a plate or bar can be perforated, or punched at any point of its surface by the application of steam to the punch and metal at such point, thereby avoiding the necessity of heating the whole mass. Thus, a boiler or spring plate or bar of steel may be annealed at any one point or place, and then punched without straining the metal, which would not be the case if not rendered pliable. At the same time, it is much more convenient and easy to manipulate, and with less labor and expense, than when softened in a furnace in the ordinary way; also, the metal is not impaired in quality by the use of steam, whereas it is by the action

Fig 2.

of the gases from the furnace, or fire, used for annealing.

In making steel screws, rivets and bolts, the wire, or rod, is passed through a chamber, or cylinder, heated by steam to such a degree as will render it pliable for working. A, Fig. 1, represents an outside view of cylinder, or steam chamber, through the center of which passes a tube, B, Fig. 2. Said tube is secured in each end of the cylinder in a steam-tight manner by heads, C. The ends of the tube are open to the outside; so, also, is the cylinder, by means of the induction pipe, D, and stop-cock, E.

This device is especially intended to anneal wire and rods used for the manufacture of wood screws, bolts and rivets, and which device is used in connection with the machines for making such articles. The wire, or rod, immediately before entering the machines, is run through the tube, B, which, by the induction of steam into the cylinder through the pipe, D, heats the tube and the wire, or rod, therein, to a degree that renders it much softer, and hence more easily worked, without affecting its tensile strength by oxidation, or its molecular arrangement. By this device the metal is not brought into direct contact with the steam.

In the use of a furnace for annealing purposes, it is a difficult matter to keep the heat at a steady and uniform degree. A variable degree of heat produces a variable degree in the annealing; hence, without the utmost care being exercised in keeping the fire at the same degree of heat, the annealing is uncertain, some of the metal being soft and some not so soft. This seriously interferes with the working of the metal when a uniformity of softness and pliability is needed, as in the manufacture of wood screws, &c.

By the use of steam for annealing, a uniformity in the degree of the result can be relied on, as the steam is of a uniform degree of heat; hence, will result a uniformity in the degree of annealing without the exercise of special care.

Claim—1. The herein described application, in the process of annealing steel and iron, of the use of steam, applied either directly to the article, or by heating the same by placing it in a heater heated by steam.

2. The herein described apparatus for annealing steel wire, &c., consisting of the cylinder, A, tube, B, and chamber.

IMPROVEMENT IN THE MANUFACTURE OF STEEL.

Specification forming part of Letters Patent No. 139,778, dated June 10, 1873, issued to William Dougherty, of Philadelphia.

Steel cast in the ordinary process is rarely free of seams, soft places, honey-comb, &c., thereby causing considerable loss to the manufacturer or purchaser. The object of this invention is the production of steel free from these defects. It relates to casting of the ingots in sheet metal molds or cases, of such thickness as will be brought to a welding heat without chilling the surface of the ingots, so that the steel and case may cool and shrink simultaneously, and the case become thereby welded to the steel, and thus exclude the atmosphere from the latter and thereby prevent such imperfections as result from the shrinking away of the steel from the mold.

The case, of sheet metal, may be of any form and size the ingot is required to be, taking care to not have the sheet out of which it is formed of greater thickness than will be brought to a welding heat without cooling the surface of the melted steel when poured into it, so that the case and ingot may cool simultaneously and a complete welding be produced. The sheets out of which the cases are formed should not be too thick, otherwise a welding will not take place, and the thickness should vary according to the size of the case; consequently, for casting small bars of steel, say two or three inches in diameter, the thickness should not be more than the sixteen wire gauge. The steel thus incased when put into the furnace for heating, having its surfaces completely protected from the atmosphere, retains the carbon in its imperfect places as well as in the solid parts of the metal, and, consequently, when subjected to the action of the rollers or hammers, a complete welding of the metal is produced, and a homogeneous mass of the metal is the result. A portion of the metal case or mold is burnt or wasted away during the process of heating the steel. The remainder, being thin, is taken off, or nearly so, in the working of the metal, so that no inconvenience results from the steel being incased.

Claim.—The method of casting steel in wrought iron or other metallic cases when the latter is of such thickness as to admit of the heat of the melted steel completely welding the case to it.

IMPROVEMENT IN PUDDLING FURNACE DOORS.

Specification forming part of Letters Patent No. 140,730, dated July 8, 1873, issued to John S. Rees, of Phillipsburg, New Jersey.

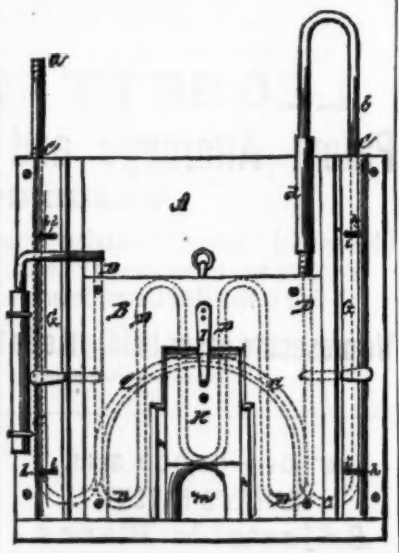
The nature of this invention consists in the construction and arrangement of a door frame and door for puddling and other furnaces, as will be hereinafter more fully set forth.

In order to enable others skilled in the art to which my invention appertains to make and use the same, I will now proceed to describe its construction and operation, referring to the annexed drawing, in which—

Fig. 1 is a front elevation, and Fig. 2 is a plan view of my frame and door.

A represents the door frame, and B the sliding door of a puddling or other furnace. The frame A contains within it a tube, C, which may be bent and fitted to different shapes and forms. *a* represents the inlet to said pipe C, through which the water is admitted, and *b* is the outlet connected, by a sliding joint, *d*, or rubber or other hose, with a water tube, D, contained within the door B, and also bent and fitted in any desired shape and form.

Each tube may be one continuous piece, or made with elbows; but it will be more durable if made of one piece of pipe. In case of low water the pipe will not crack; or if the water



IMPROVED PUDDLING FURNACE DOOR.—*Fig.* 1.

is stopped and the tubing becomes red-hot a stream of water put into the pipes will not crack them as it will cast iron. Again, the tubular frame is better because the water has a direct course by the point most exposed to the fire, and may be guided wherever the builder

Fig. 2.

may wish. By the use of the tubular frame there will be no overflow of water, for the connections, being tight, will confine the water in its proper course.

The cast iron frame A, which contains the water tube C, can be cast in two parts, so that if the front half be removed it will expose to view the pipes, while the inside half will remain to keep the brick work in place, and will also keep the tubing in position. The parts when put together are fastened with screws or bolts; or the whole door frame may be cast solid, with the tubing in the center as a core; or the tubing may be used without the cast iron frame, and may be placed in the brick walls. The lugs *f f* on the bottom of the frame form a rest for the brick work inside.

The door B with its water tube D may be made precisely in the same manner as described for the frame A, but the brick work in the door is made in one, so that it can be taken out and replaced in a few minutes, while furnace is being worked. On the frame A are adjustable dovetail guides G G, in which the door works, which are of great importance to the frames, with or without the water. The dovetail keeps the door in its proper place, and will protect the tubing when taking iron from the furnace. The guides are adjusted by means of bolts *h h* passing through slots *i i* in the guides, whereby the door may be kept tight and stationary in any position the worker may desire, and dispenses with the use of lugs, pins, and bars, now so generally used. At the lower edge of the door B is an aperture, *m*, closed by a stopper, H. This stopper is arranged to slide in dovetailed guides *n n*, and remains on the door; and it is held up by a spring, I, while working the iron and while taking the iron from the furnace, instead of taking the stopper off.

Claim—1. The combination of the frame A, door B, and adjustable guides G G.

2. The combination of the door B, stopper H, and spring I.

Specification forming part of Letters Patent No. 140,927, dated July 15, 1873, issued to Andrew Kloman, of Pittsburgh, Pa.

IMPROVEMENT IN APPARATUS FOR COOLING AND REMOVING BLAST FURNACE SLAG.

Figure 1, is a top or plan view. Fig. 2 is a vertical sectional view of my improved apparatus. Like letters of reference indicate like parts in each.

In the operation of blast or smelting furnaces it is desirable to get rid of the slag or cinder, which is comparatively a waste article, in as cheap and expeditious a manner as possible. Ordinarily it is run off into a cast iron pan or box, till the same is full, and then into another which is substituted for the first; and, by means of a crane, these boxes, filled with solidified cinder, are loaded on to a cart or truck and removed.

In order to facilitate this operation, and more completely effect it, an apparatus is provided which consists substantially of an annular water trough with supply and waste pipes or passages, in which trough, by suitable appliances, a series of pans or boxes, smaller at the bottom than at the top, for receiving, as they are successively brought under the spout, the molten slag or cinder from the furnace are caused to rotate. These boxes or pans are flanged at their upper ends so as to rest on a rotating frame; and the joints between one box and the next are covered by caps, which keep the molten cinder from getting into the joints. In each pan a lifting pin is arranged, which is largest at the lower end, and has an eye at the upper end, by means of which a connection is made from the crane, and the block of solidified cinder can be removed or hoisted out of the pan and loaded on to a cart or truck for removal. This lifting-pin, being largest at the lower end, can then be knocked out from above and reused as before.

The annular trough is represented at A, the sides *a* of which project upward so as to contain water of the desired depth, which water is supplied by a pipe, *c*, preferably arranged to discharge into the trough A in the direction of the rotation of the pans yet to be described, and the excess or overflow of water escapes at the waste-pipe *c'* at or near the upper edge of the trough A. The water thus introduced is for the purpose of keeping the pans cool, and solidifying the cinder therein as rapidly as possible. Within and without the vertical sides *a*, and in suitable supports, are a series of rollers, *e*, on which rests the rotating frame B. This frame consists substatially of the inner and outer rings, as shown, and of radial arms B^1, which extend out from the central hub B^2, and which receive further support by means of the braces or rods B^3, which connect at their upper ends with a hollow spindle arranged on a vertical post, B^4. The rings B and the radial arms B^1 divide up the outer part of the frame into a series of openings, in each one of which a pan or box D, is arranged, and wherein it is supported by means of a flange, *d*, around its upper outer edge, which flange rests upon the rings B or radial arms B^1, or both, as may be desired, and the pans or boxes D are held in place by means of T heads *d'*. The pans or boxes D are made smaller at the bottom than at the top, in order that the solidified cinder therein may more readily be removed. In the bottom of each pan, at or about its center, a screw head or other small projection, *s*, is fixed as a centering device for the lifting pins *b*, which pins are made larger at the lower end, with an eye, *s'*, at the upper end, or other suitable means for making connection therewith, and with a recess in the lower end, as shown, by means of which they are centered or seated

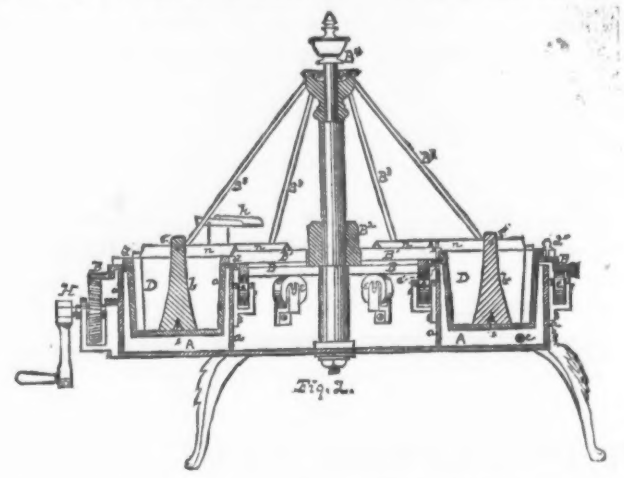


Fig. 2.

on the bottoms of the boxes and over the projections, *s*. The flanges, *d'*, and those parts of the radial arms, B^1, on which they rest are covered by means of caps, *n*, preferably of inverted V or U shape, so that the molten cinder cannot get into the joints of the boxes and arms. The frame work, B, B^1, constituting what is commonly called a spider, and carrying the boxes, D, immersed in water at their lower ends, is caused to rotate by means of any suitable crank and gearing device, as shown at H, so as to bring each box, D, under the delivery spout, *h*, leading from the tap-hole of the blast furnace. As soon as one box, *d*, is full, the lifting pin, *b*, having been previously arranged therein, the workman rotates the spider until the next box, D, comes under the spout, *h*, and so on till the cinder is all run off. As soon as the cinder in a full box has become solid, the hoisting hook, or other device of the hoisting crane, is connected with the upper end of the pin *b*, and the block of cinder is removed, the

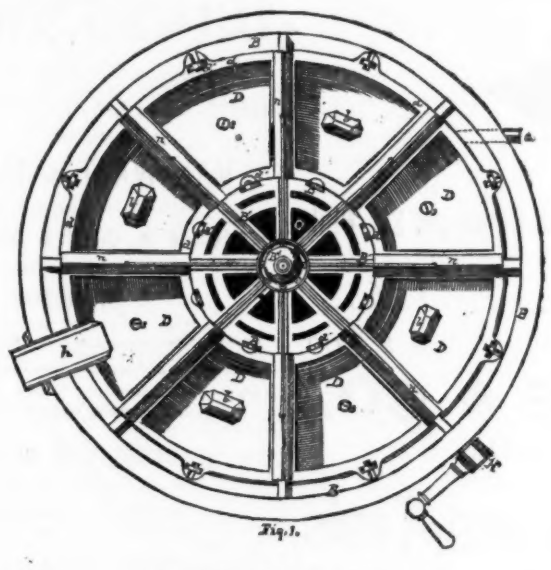


Fig. 1.

IMPROVED SLAG APPARATUS.

pin *b* is driven out from above, replaced, and the pan is again ready. If it is necessary or desirable to lift out the pans D it can be done by sliding the caps *n* upward on the rods or braces B^3 till they are out of the way, and then the boxes D can be removed and replaced or renewed at pleasure, and the caps *n* again placed in position. Other suitable stop device may be substituted for the T-heads *d'* and center projections *s* may be made on the lower ends of the lifting pins *b* and the recesses in the bottom of the boxes D.

Claim.—1. As a step in the removing of blast furnace slag or cinder, running the same off into boxes which are partially or wholly immersed in water.

2. In combination with an annular water pan, A, a series of boxes, D, suitably arranged to be rotated successively under the spout leading from the tap hole of the blast furnace.

3. In combination with a slag receiving box, a lifting pin, *b*, largest at its lower end and having an eye or equivalent connecting device at its upper end.

4. A centering pin or projection and a recess corresponding thereto, one arranged in the bottom of each box D and the other on the bottom of each lifting pin *b*.

5. The combination of the trough A, spider B B^1, the boxes D, and caps *n*.

6. The combination of the annular rings B, boxes D, and T heads *d'*, or other suitable stop device in lieu thereof, all substantially as described.

Tensile Strength of Lake Superior Iron.—The Detroit *Free Press* makes a record of the following experiments with iron made from Lake Superior ores, by the Wyandotta Company: A bar of railroad iron was put under the hammer and bent, twisted and tortured until no resemblance of the original bar remained. An effort was then made to hammer the head of the rail from the flange, but it proved unsuccessful. It must be understood the experiments were made when the iron was cold, which is the severest test to which iron can be submitted. The experiments with the chains were equally satisfactory and showed a marvelous power of resistance. A Bessemer steel chain, 1¼ inches in thickness, withstood a test of 121,850 pounds to the square inch. The following comparisons will show the relative tensility of Lake Superior and English iron, the trials having been made by the use of the testing machine made by Riehle, of Philadelphia, which is that used for all tests in which the government is concerned: A one-fourth inch chain of American (Lake Superior) iron withstood a draft of 101,750 pounds, while a chain of English iron of the same size broke at a test of 76,500 pounds. A five-eight inch chain, American, 24,875 pounds; English, 16,000 pounds. A three-fourth inch chain, American, 38,000 pounds; English, 26,000; a one-half inch chain, American, 15,825 pounds; English, 8,500, and a seven-sixteenth inch chain, American, 10,250 pounds; English, 5750.

The Reliance Iron Works, Milwaukee.

The Reliance Iron Works, Messrs. E. P. Allis & Co., proprietors, are entitled to take rank among the most promising industrial enterprises of the Northwest. Mill construction was originally the chief business of this establishment, and is still a specialty. Everything in this line is made and furnished for grist mills, as bolting cloths, picks, belting, mills, separators, dusters, feeders, elevators, shellers, scales, etc. They also manufacture saw mills of various popular kinds. The mill department is very complete and full of interest. They bring their burr blocks for mill stones all the way from France. This stone is a curious illustration of how Nature sometimes mixes things up. Flint, shells, pebbles and combinations of iron seem to have warred against and torn each other, when they were embraced and cemented in a most obdurate paste of quartz crystals. The most finely tempered tools barely make an impression on it. These stones, fashioned, fitted together, are bound around with rims of iron. Their surfaces are then furrowed, and when mated in pairs they are ready for use. Some two hundred pairs of these stones are kept constantly on hand.

STEAM ENGINES.

From this their business advanced into steam engine manufacture. Stationary, portable, upright marine engines and upright low pressure engines are made with dispatch and perfection. The engines that drives the machinery of the Reliance Works is a marvel of mechanical skill, power, durability and beauty. This beautiful engine was built by Messrs. Allis & Co. for their own use, from patterns of the Washington Iron Works engine, and is very costly. They manufacture, however, their own improved engines, very little inferior in power and economy to those of the Corliss class.

MACHINE AND REPAIR SHOP.

Their machine and repair shops are also very complete, as may be seen in the accompanying list of their equipments: Five steam engines, three boilers, sixteen power iron lathes, four wood lathes, seven iron planers, three wood planing machines, two gig saws, one shaping machine, seven iron drill machines, one gear cutter, one milling machine, one slotting machine, one iron boring mill, one cutting-off machine, three bolt cutters, one iron punch, three Root's rotary blowers, two steam hammers, two sawing machines (four circular saws), two steam cranes, thirteen hand power cranes and one large derrick. Here they make pile drivers, dredges, hoisting machines, steam pumps, pullies, shafting, and all things in that line. Their shops are possessed of every facility for altering or repairing machinery of every description. Their patterns fill out a list of thousands; and from twenty to thirty carpenters and pattern makers are constantly employed, so that they can always recast a broken part.

PIPE DEPARTMENT.

They have lately branched out into a new line—pipe casting. Having secured the services of Mr. John Pennycook, of the Shoots Works, Edinburgh, Scotland, and formerly of the pipe works, Chicago, and of Mr. Wm. Wall, both of whom have been engaged many years in the manufacture of cast iron pipes, they are able to turn out superior gas and water pipes, from three inches in diameter up to thirty. This branch of their business is very thorough and involves a large outlay. The establishment makes any sizes of pipes up to 30 inches diameter, and are prepared to fill orders for even larger sizes. The capacity of the pipe shop is 4000 tons. At present they are mining about 25 tons of metal per day. In the foundry about 10 tons is run per day. The principal work now in hand is the construction of two great pumping engines for the Milwaukee water works. These engines, designed by Mr. R. H. Hamilton, who also designed the new Brooklyn water works engine, have each a capacity of 8,000,000 gallons per day. They are said to be the largest pumping engines in the Northwest.

The works cover about five acres of ground, and there is room for expansion whenever business shall require.

THE NICHOLSON FILE.

All Nicholson Files are cut with the Patent *Increment Cut*, an invention owned and controled exclusively by us, the file cut in this manner being Patented as a new article of manufacture, and differs from all other machine cut files (all of w ch have their teeth cut with equal spaces) by being cut with teeth slightly *expanding or increasing in size and space from the point*, thus avoiding the too great regularity of teeth common to all other machine cut files. The tendency of all cutting tools with teeth or cutters placed at regular distances from each other may be illustrated (to the machinist at least) by the fluted reamer—as it is well known that if a round reamer be made with (say 12) teeth whose spaces are equidistant, the hole reamed will *not* be round and smooth, but will approximate to a hexagon in shape. Whereas, if the same number of teeth be made of irregular distances, the hole reamed will be both round and smooth. The same is true of a file, hence the necessity of its having teeth at unequal distances, and to which we have applied the name of Increment Cut File, which possesses all the advantages of hand cut work, and the accuracy and uniformityof machine work. It is now upwards of seven years since this File was introduced to the public, and the demand has increased until our production is undoubtedly treble that of any File manufactory in the country.

We put all files under seven inches in boxes of either one-half or one dozen each. These boxes are neatly arranged, and open on the end, on which the kind is plainly marked with printed labels, acknowledged improvements on the old methods.

The "*Increment File*" is not an experiment, but an established fact, and already has acquired a legitimate demand for upwards of 500 dozen per day. We employ no *regular Travelers*, but our goods may now be found in the hands of the principal jobbers and dealers throughout the country.

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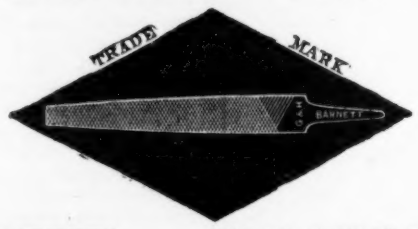
Black Diamond File Works.



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Steel Wire for Sewing Machine Needles and for other Purposes,
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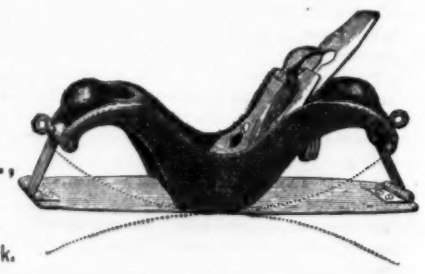

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Of *uniform* temper, and will *hold* a fine cutting edge; with solid *steel caps*, and *fully warranted*.
AND THE
Patent Machine Forged Ox Shoes,
Better and cheaper than any hand made shoe, universally liked, and always used after one trial. Also
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TRADE
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WARRANTED CAST STEEL

BUSINESS ITEMS.

PENNSYLVANIA.

The Pennsylvania Railroad Company recently gave the Baldwin Locomotive Works, Philadelphia, a contract for building 175 locomotives by the first of January, 1874. These locomotives are constructed in Philadelphia and then shipped to Altoona, where they are put together, inspected, and put on the road. Seventeen of the number have been built and are now running on the line.

The National Locomotive Works, Dawson & Bailey, Connellsville, have a capacity of three locomotives a month, and give employment to 120 persons. Messrs. D. & B., a few days ago, shipped a 6-wheel locomotive to Salt Lake City that differs somewhat from an ordinary locomotive, as it is intended to run on a road which in some places has a grade of 500 ft. to the mile. The hind drivers have grooved tires, and to prevent them from slipping they are caused to adhere to the rails by a small steam cylinder that operates on the same principle as those used in connection with air brakes.

On the 19th instant these was shipped from Philadelphia, for New York, a set of machinery for manufacturing indigo, destined for Eldina, Liberia. The machinery is a recent invention of Messrs. E. I. Morris and T. T. Woodruff, of Philadelphia. Mr. Morris, one of the inventors, is largely engaged in the development of the resources of Liberia. It is claimed for the new machinery that it can manufacture twice as much indigo from the same amount of plant as is produced in India, the great indigo country; and, also, that it can accomplish in four days what it takes four months to do in India. In the latter country, men, women and children are used to agitate the liquid indigo by treading in it, and thus to granulate it. The machinery, it is claimed, accomplishes the granulation by means of blow-pipes, which admit oxygen into the lower portions of the vat, expelling the carbonic acid. The machinery consists of an iron tank, seven feet in diameter and five feet deep, and a blowing engine of five horse-power, and was manufactured at Woodruff's Machine Shops, Norristown. The engine is connected with the vat by ordinary hose. The granulated indigo, after being taken from the vat, is dried in kilns specially arranged for the purpose.

NEW JERSEY.

The Todd & Rafferty Manufacturing Company, of Paterson, discharged forty-four men out of their boiler shops and forty-nine out of their machine shops yesterday. This is caused by the suspension of operations at the Rogers Locomotive Works, who used most of the boilers built by this company. Still further reductions are contemplated.

The rolling mill at Elizabethport was stopped on Thursday and all the employees discharged. This action of the Elizabeth Iron Company was anticipated, as the mill has only been running of late to fill out some orders. The time when work will be resumed is not announced.

INDIANA.

The Terre Haute Iron and Nail Works were totally destroyed by fire on the 19th. The establishment employed 145 hands. The loss is $175,000, and insurance $37,000. The works will be rebuilt immediately.

The Knightsville *Enterprise* says: "The pay roll of the Western Iron Co., at this place, is now something over $20,000 per month, with only one furnace in operation. Total monthly expenses are about $40,000. This is the largest business corporation in the county, and when all the works are run at their full capacity, their disbursements will approximate $60,000 per month.

The new furnace at Minersville, Schuylkill county, was blown in a few days ago, and is now making about twenty-five tons of metal per day.

The new foundry and machine shop at Warren are to be completed within sixty days.

Willard A. Brown, of Philadelphia, has discovered a new process of welding steel without the aid of borax. The flux, it is said, costs less than ten cents a pound, and that quantity will do the work of three pounds of borax. It will be tested shortly in one of the prominent steel works of that city.

The Pennsylvania Steel Company, at Harrisburg, manufacturers of Bessemer steel, turn out 100 tons per day. They have a new mill, but it has not yet been put in operation. The proprietors complain that they cannot get enough of pig in this country suitable for making Bessemer, and that the English pig is too dear. They, therefore, have purchased ore beds, and will erect at least six blast furnaces, the first of which will be in operation in a week or two. Experience is teaching a good many others the absolute importance of finished iron manufacturers owning their own furnaces and ore beds.

CONNECTICUT.

The cutlery works of Miller Bros., at West Meriden, are turning out 1200 pocket knives a day, and give employment to 80 hands. A forging shop has just been added to the main building.

The Union Hardware Company, at Wolcottville, are manufacturers of skates, skate straps, dog collars, sheaths, belts, tool handles and mallets of all descriptions, and the celebrated Bandelot beer coolers, with Turrell's improved patent oval tubes. The company's works are very extensive, covering about 20 acres of ground, and located in convenient proximity to the railroad station. About 200 operatives are employed in the establishment. Their manufactures have an extensive sale in both this country and Europe.

ILLINOIS.

The car shops of the Chicago, Burlington, and Quincy Railroad, at Aurora, some eight in number, were burned a few weeks ago, involving a loss, in buildings, machinery, and lumber, of about half a million of dollars. Since that time there has been much anxiety felt by the citizens as to whether the railroad company would rebuild. The plans, however, have been drawn, the ground staked out, and the contract for the erection or the new buildings let to Mr. A. Wallbaum. The buildings will be a blacksmith and boiler-shop 80x200 feet, a wood machinery shop 80x300 feet, a freight-shop 80x310 feet, and a coach-shop the same size. They are all to be of brick, with iron truss-roof covered with slate. The car and coach-shops will each contain 14 tracks, capable of containing 28 passenger-coaches or 56 freight-cars at one time. Other buildings of like magnitude will be commenced next spring.

MAINE.

A. Miller & Co.'s iron foundry, at Bridgeton, is doing a considerable business in turbine wheels and shingle machines.

The Dunn Edge Tool Company, of West Waterville, shipped the past season 11,000 dozen scythes, 4000 dozen axes, 1000 dozen grass-hooks, 500 dozen straw knives, and 350 dozen hay-knives.

The gun factory at Mechanic Falls is being enlarged.

MASSACHUSETTS.

Heald & Britton, Worcester, whose foundry was damaged by fire to the extent of $1500, on the 27th of August, are in full operation, turning out a large amount of car castings, mowing-machine castings, and a great variety of machinery for the manufacture of machinists' tools.

The Clark & Chapman Machine Company, at Turner's Falls, furnish a Chapman turbine water-wheel for the new Carew paper mills, at South Hadley Falls.

All kinds of boot machinery are produced at the works of S. Jefford, Milford. Among his manufactures are crimping, rolling and turning machines, boot-stretchers, heel-cutters, crimping-screws, pegging-jacks and closing-clamps.

The Turner's Falls Cutlery Company has resumed work, and is employing about four hundred hands.

OHIO.

The Ohio Iron Company, at Zanesville, manufactures bar, hoop and angle iron, light T rails, railroad spikes and car-axles. The company is now building a new warehouse, 48x80 feet, and has just commenced a new mill, 80x166 feet, which will contain 8 and 10-inch finishing trains and an engine of 130 horse power.

The incorporators of the Toledo Furnace and Rolling Mill Company recently sent a committee to various iron works throughout the country to inquire into the various methods of rail-making. They reported a few days ago, and recommended the organization of a company for the manufacture of silicon steel rails.

MISSOURI.

The mills of A. McDonald & Co., at St. Louis, turn out from forty to sixty car-axles per day, beside locomotive crank pins and other forgings. About sixty-nine men are employed.

Dozier, Maharg & Co. have erected works at Kinswick, Jefferson county, for the manufacture of charcoal blooms and Maharg blooms. An anvil weighing 16,000 pounds was recently cast for this firm.

The Louisiana *Journal* says that work on the Booneville bridge is being pushed forward at a rapid rate. A force of six hundred men are now employed. The pile driving for the piers is finished. The masonry will be completed by October 15th. A portion of the iron for the superstructure has already arrived, and operations on the superstructure have begun. Pile driving for the bridge across Noix Creek will be commenced next week. It is expected that the bridge will be completed by December 15th, and that the cars will be running across.

The St. Charles Manufacturing Company, at St. Charles, was organized in March last, with a capital of $150,000. It will manufacture railway-cars, carriages, agricultural implements, and machinery.

The Philadelphia correspondent of the Germantown *Telegraph* says: "It is now believed that the iron product of this State can be easily doubled in a few years if the requisite capital and railway facilities can be obtained. Indeed, the prospect of the iron trade of Pennsylvania was never half so good as at present. It is announced to be the purpose of the Reading Railroad to construct one hundred blast furnaces on their coal and iron lands by advancing money on mortgage to any person or corporation that will build and work a blast furnace. On this arrangement fifteen different starts have been made already, and some of the furnaces are in process of erection. This great corporation proposes to stimulate the use of coal and iron at home as has long been done along the Lehigh Valley and in the Scranton region. No doubt many persons will call this monopoly, but to me it rather looks like following good examples set elsewhere. The argument is that the coal and iron can be used to more advantage where they are found together, than after transportation to long distant places. As the result of these movements the Schuylkill region promises to become a wondrous scene of industry. This iron when made will find a good market along the Delaware in iron ship building and in the manufacture of machinery, etc. There is still a mystery surrounding the Reading purchase of ground along the Delaware River at Chester, which embraces five hundred acres. These movements indicate that the future of this whole region will be brilliantly prosperous."

The Montreal *Witness* says that the largest piece of forging ever made in the Dominion has just been turned out of the Moisic Iron Company's forge at Brewster's bridge, in that city. It is a main shaft intended for the steamer Saguenay, to replace the one some time ago broken. It measures twenty-five feet three inches in length, thirteen and a half inches average diameter, and weighs over seven tons. It is made of Moisic iron, and is pronounced by several Canadian engineers who have examined it to be as good as anything of the kind made in England or the United States, from which countries, previously, such articles were obtained.

HENRY DISSTON & SONS'

SAW, TOOL,

STEEL AND FILE WORKS,

Front and Laurel Streets,

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MANUFACTURER OF

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Solid saws require frequent gumming, thereby subjecting them to risk of springing or breaking. This is especially the case with cross cuts having *Patent Teeth*. In the perforated saws **all gumming is avoided,** and the teeth are easily kept long and in *proper shape*, saving *files*, *labor*, *expense* and *vexation* As is well known, our saws cut faster, smoother and easier than any other.

MOVABLE-TOOTHED CIRCULAR SAWS AND SOLID SAWS OF ALL KINDS.

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EXTRA CAST STEEL SAWS,

Plastering Trowels, Tools, &c.

Saw Manufactory, Iron Foundry & Machine Shops, ELIZABETHPORT, N. J.

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J. FLINT & CO.

Manufacturers of all kinds of SAWS and PLASTERING TROWELS.

ROCHESTER, N. Y.

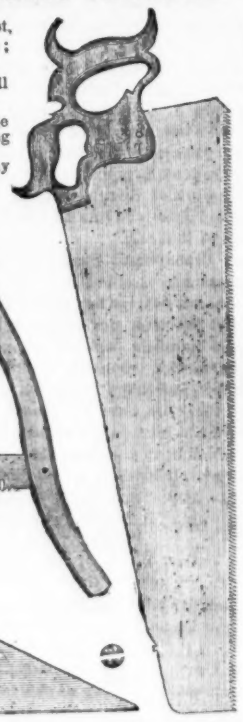
Dietrich's Patent Wood Saw. Guaranteed the strongest, lightest, easiest to strain or tighten and best braced wood saw made; also to give perfect satisfaction.

Dietrich's Patent Double Handle Rip Saw. All will readily see the benefit of this useful invention.

J. Flint's Patent Plastering Trowels. The best made and finished Trowels in the world. We make four grades of Plastering Trowels, from the best to the cheapest.

Our patent method of grinding hand saws makes them superior to any in the market.

Send for Illustrated Price List.



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Mining & Paving Tools,
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Mauls,
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Blacksmiths' Sledges,
Masons' Brick Hammers,
Sweages, all sizes,
Mill Picks, Crow Bars,
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Coopers' Hammers,
Masons' Stone Axes,
File Cutters' Hammers,
Striking Hammers,
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Horse Shoers' Tools,
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HAMMERS of all kinds made to order, on receipt of Pattern or Drawing. Special attention paid to R. R. Work.

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OF ALL KINDS, INCLUDING

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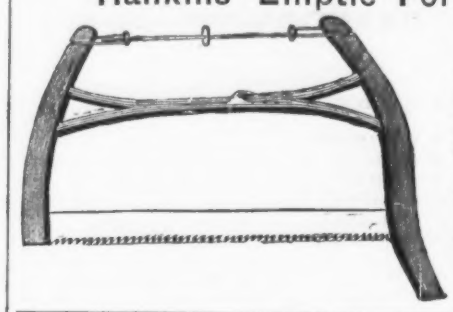

The annexed engraving represents HANKINS' ELLIPTIC FORKED SAW FRAME, which commends itself to the trade for its simplicity of construction. The Forked Brace being all in one piece, without any centre bolt, secures for the Frame great strength and durability.

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Best Cast Steel Patent Ground Saws.

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CROSS-CUT SAW HANDLE.

Best Patent Handle in use.

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I make a specialty of the LARGEST SIZES of **Circular Saws,** and call particular attention of lumber manufacturers to the following points of excellence:

Evenness of Temper.—The peculiar structure of my furnace subjects all parts of the saw to a DEAD heat, and when dipped in the oil bath secures perfect uniformity.

Perfect Accuracy in Thickness.—My saws are ground on a patent machine, automatic in its operation, grinding off the thick places upon the plate before the thinner parts are reached, and when the saw is removed BALANCES PERFECTLY, which is proof positive of the right accomplishment of the work.

Properly Hammered.—Great care is taken that no saw shall leave my works without due attention in this important particular. A saw too tightly strained upon the rim, or too loose in the center, cannot be successfully run—hence the importance of so hammering the saw as to effect equal strain in all its parts, and at the same time RUN TRUE. This department is under the personal supervision of myself, who has devoted over *twenty years* to the art of saw making.

I am sole proprietor and manufacturer of the celebrated **"Challenge" Cross-Cut Saw.** Price Lists of all kinds of saws sent on application.

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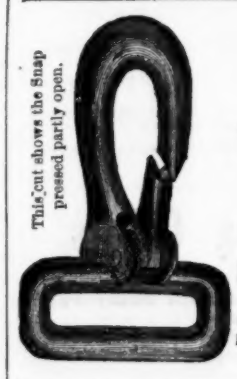
Bed Screws, Pin Hinges, and Wire Nails a Specialty.



This cut shows the Snap pressed partly open.

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The Celebrated "Baldwin" Plane Iron,

HENSHAW'S PATENT HARNESS SNAPS

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PAT. GAFF TOP-SAIL SELF-MOUSING SHIP HOOKS

Plow, Fillettster & Dado Stops of all kinds. Set Screws for Plows, Bench Plane Starts, &c. Patent Washer Cutters. Plan Iron Screws to order of any size.

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DUCKHAM'S PATENT

Hydrostatic Weighing Machines

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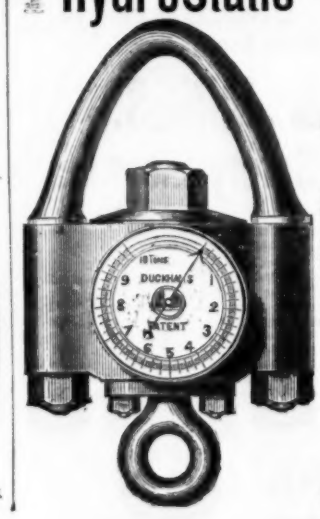

Capable of Weighing from 10 Cwt. to 100 Tons and Upwards.

Some purposes to which it can be applied.

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Awarded the Medal of the American Institute, 1872.

Two Direct Cutting Edges, instead of one Scraping Point. Note extra steel and durability over the old V, outlined on M tooth.

A Challenge of $500, toward expense of a public test, to prove that the Lightning Saws excel all others in Speed, Ease, and Simplicity, has been offered since 1870, and has never been accepted. More than 100,000 Lightning Saws were sold during the year 1872, the purchasers of which testify to their superior merits.

Our leading papers, such as the *Tribune, American Agriculturist, Christian Union*, etc., have published over sixty editorial notices recommending these Saws. Farmer's Clubs, Lumbermen, and Hardware Dealers unite in pronouncing the genuine Lightning Saw the greatest labor-saving implement of the age.

I have hundreds of letters from practical sawyers, voluntarily written, expressing their entire approval of these Saws.

Where the Hardware Trade do not sell the Lightning Saw, I will send a 6-foot cross-cut and a buck saw-blade on receipt of $5.

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Mowing Machine Sections of all patterns constantly on hand.

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Manufacturers of Warranted Cast Steel

SAWS

of every description, including

Circular, Shingle, Cross Cut, Mill, Hand, Roberts' and other Wood Saws,

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New Style Testing Machines, all sizes, Wrought Iron Lever R. R. Track Scales, Parallel Crane Beams and Mortising Machines.

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POWER HALL.

One of the principal features of the Exposition is the machinery department, covering nearly an acre of ground, and containing about four hundred machines, not less than one hundred and fifty of which, not including hand machines, are in motion—planing, turning, sawing, pumping, grinding, &c., &c.—making, probably, the most diversified display of machinery ever seen in this country. Under the able management of Mr. Frank Millward, superintendent of Power Hall, the most perfect harmony and good feeling has been maintained from the first, and exhibitors, without exception, so far as we have been able to learn, express themselves delighted with the arrangements. We refer to this particularly, as some dissatisfaction has been felt heretofore in this department.

Two batteries of boilers outside the building furnish steam, not only for driving four main lines of shafting, but also for numerous independent engines in different parts of the building, the pipes being covered with an asbestos preparation, known as the Chalmer-Spence Patent Non-conductor. The gauge used on these and other boilers in the Exposition is manufactured by Mr. R. C. Blake, of Cincinnati, under his own patent, the essential part of which consists in a spirally corrugated steel disc, which is compensating in its movement to the extent that, when the pressure is applied, it has a motion around as well as parallel to its axis, by the rotation of the spiral as the pressure is applied, thus distributing the strain on the fibers of the steel throughout the whole area of the disc. Mr. Blake is just completing a couple of gauges for the government, to be used at the steam boiler tests soon to be made at Sandy Hook and Pittsburgh, which will register 1200 lbs. to the square inch. They will be constructed with two index hands, one of which will travel eight times as fast as the other, thus indicating more exactly the number of pounds of pressure applied. By an automatic stop the hands will remain fixed at whatever point explosion may take place.

Power is supplied by three engines, the novelty among which is the Harris-Corliss engine, manufactured at Providence, R. I.

Messrs. Stedman & Co., Cincinnati, have an ordinary slide-valve engine of 35 horse-power, running one of the main lines of shafting. The other is an engine manufactured by Messrs. Lane & Bodley, Cincinnati, one of their standard 20x30 slide-valve engines of 125 horse-power, very simple in construction and substantially built. Nearly all the shafting in the building was furnished by this firm. They also exhibit a lift and force pump for supplying steam boilers, with cast iron base and two cast iron columns with pipe connections; a portable 12 horse-power engine, mounted; three saw mills, with solid iron frame, wrought iron head blocks, automatic clogs and friction feed, one of which is in daily operation; several saws for the shop, including a lath machine and a railway cut-off saw; also a rail car mortiser, and a cabinet mortiser for sash and door work. Their Domestic Motor, a complete horizontal, high pressure, slide valve engine with force pump, heater, governor, and all parts complete, which they have just brought out, is a simple and economical engine, designed for light work. They are made from one to six horse-power. The boiler is of the vertical fire-box, tubular form, and rests on the same casting that forms the ash-box and bed-plate for the engine, the whole occupying no larger space than an ordinary stove. The press on which the *Trade List* is printed, which, during the Exposition, is published daily, of ordinary eight page form and size, in the Exposition building, is run by one of these engines.

The Owens, Lane & Dyer Machine Co., of Hamilton, O., exhibit one of their Eclipse saw mills, run by an ordinary slide-valve steam engine of their own manufacture, and is the only firm competing with the former establishment.

Nearly all the belting in the hall is furnished by Messrs. Bradford & Sharp, of Cincinnati, who have not less then 139 leather belts doing constant service. They exhibit a belt 22 in. wide, 96 ft. long, and weighing 400 lbs.

There is a very large display of iron-working machinery, at the head of which are the Niles Tool Works, of Hamilton, O., comprising in all twelve machines of the most heavy and substantial "character," especially designed for railway locomotive machine shops. There are five engine lathes, ranging from 18 to 42 inches swing, the largest being triple geared and in every respect a machine of unusual strength. The wheel borer, a machine admirably modeled to resist the severest strains to which it may be subjected, has a tool-holding bar 8 in. in diameter and a bearing of 36 in., with the upright correspondingly strong; the chuck is self centering and 48 in. in diameter, the whole weighing 12,500, lbs. The double car-axle lathe is built to overcome the difficulty of lateral strain, which is successfully accomplished. Both ends of the axle are operated upon at one time by two independent tools, thus finishing it without turning, making its capacity in every respect equal to two ordinary lathes. There are two car wheel presses, one with single pump 3/4 in. in diameter and designed for small establishments, where cost is a very important item, the other, with double pump for the largest shops, has a large pump 2 in. in diameter which, at 100 strokes per minute, will move the ram 24 in., so that no time is lost in taking up the slack.

Gray's patent radial drill machine has undergone some recent valuable improvements, and is generally regarded by machinists as a model of its kind. Since the removal of the shops of this establishment to Hamilton, where ample space was to be obtained, their works have undergone a complete remodeling, and their machinery is first class in every respect, and with capacity and capital comparatively unlimited, they are successfuly competing with the best in the country.

Messrs. Long & Allstatter, of Hamilton, O., have on exhibition one of their No. 0 combined punch and shearing machines, weighing 10,000 lbs., with depth of jaws 24 in., and a capacity to punch an inch hole through 3/4 iron, designed for rolling mills, safe makers, &c. They also exhibit several others of smaller size. The large machine is in constant operation, having a contract to punch 18,000 fish bars while here. Since entered it has been sold to the Licking Iron Works, of Covington, Ky., now building.

The American Bolt and Nut Works, Cincinnati, have one of their bolt cutters in operation, which has an improved automatic opening of the dies, consisting of a moveable steel cone sleeve, working on the die shaft between two levers, which are held to the sleeve by springs, and whose opposite ends fit into jaws in the die slides. By means of two adjustable collars on parallel rods connecting the cone sleeve with the moveable clamping carriage, a lug on the latter strikes the inner collars, forcing the rods back, and with them the cone sleeve, to its conical point, when, the spring throws open the dies. A similar operation closes them as the carriage is drawn back. By having the die chuck detachable, and the use of an extra chuck, the service of the cutter is not lost when changing to cut different sizes. They also exhibit a nut tapper with four spindles, cutting from 3/8 to 1 1/4 in., with automatic oilers. This is the largest establishment west of Pittsburgh, employing 150 hands in manufacturing bolts, nuts, washers, fish bars, &c. In another part of this building they exhibit four card boards of the various sizes of bolts and nuts.

Another machine which attracts much attention is the Burdict Bolt Forging Machine, manufactured by Plumb, Burdict & Barnard, of Buffalo, N. Y. By its construction the blank remains stationary, the end resting against a stop, the holding dies closing on the iron and holding it firmly until the head is completed. The stock for the head is upset by a plunger, while the forging dies follow, acting simultaneously on the four sides, by which the head is brought to the desired size and shape, without injuring the strength of the iron.

A new bolt cutting and nut tapping machine combined is also exhibited by Stockwell, Griffin & Co., Ravenna, O., having dies which open automatically without stopping the machine, the bolts remaining stationary while the dies revolve. It is especially adapted for threading gas pipe of all sizes, from 1/4 to 6 in. in diameter.

Another novelty in iron working machinery is the Haddock nail machine—a self feeding nail machine of very recent invention. All that is required is to place the plates in the feeding apparatus; the machine does the rest. The blanks are cut with the heads lying alternately in opposite directions, the feed apparatus having an oscillatory movement which takes the place of continually turning the plate. Two machines of this make have been in daily operation for the past five months, and, with two unskilled feeders, have averaged 64 kegs of 104. nails per day, or a little over 21 kegs for each machine. It is claimed, however, that as high as 25 kegs per day can be obtained by using 13 in. plate instead of 12 in. Aside from the automatic feeder the machine does not differ materially from other nail machines.

A very fine display of railway and machinists supplies is made by Messrs. Post & Co., of Cincinnati, including, of their own manufacture, head lights, steam and hydraulic gauges, car fixtures, cut glass, &c. They also exhibit of Pratt & Whitney's goods, a planer 27x27, with a 12 ft. bed, and a lathe having a 27 in. swing and 10 ft. bed, with all their latest improvements; a Blaisdell Drill Press, with a table swing 26 in. in diameter, and designed to drill from the smallest to the heaviest castings; a Fox lathe for brass finishers, made by the American Tool Company, of Boston; Durell's Nut Tapper, with six spindles, and having three different speeds; one of the Howard Iron Works' Bolt Cutters, made at Buffalo, N. Y., so constructed that bolts from 3/4 to 2 in. can be cut without changing dies; a small portable engine, manufactured by Garr, Scott & Co., Richmond, Ind., having pumps, governor, safety-valve and everything complete, and occupying a space about 26 inches square; also Baxter engines of 2 horse-power. They are the agents of the Union Emery Wheel, manufactured by the Union Stone Co., of Boston. This Company imports all its magnetite from Greece, from which they obtain pure carbonate of magnesia; this is mixed with emery, and the whole moistened with bitter water—the residuum of sea-salt works; they exhibit a variety of their machines for grinding different tools. Among the goods of Post & Co.'s manufacture on exhibition, are: a bead light burner (Michael's Patent), which combines the funner, elbow and base of the burner all in one piece, thus avoiding breakage and leakage—a screw in the elbow enables the firemen to clean it readily; also a car door lock by the same patentee, beside a variety of bronze and nickle plated locks and hinges, conductors' punches, and freight-car locks of superior design. Another case contains sleeping car trimmings, and still another is filled with steam gauges.

[To be continued.]

A feat in the production of Bessemer steel has just been performed at the works of Messrs. Wilson & Cammell, Dronfield, under the management of Mr. J. Duffield, not less than 200 tons of Bessemer steel having been manufactured in the course of twenty-three hours, during which forty "blows" took place, two converting vessels and two cupolas only being used. This is believed to be the only instance, either in England or abroad, in which so great an amount of Bessemer steel has been produced in the same space of time by the appliances named.

PHILADELPHIA.

Messrs. LLOYD, SUPPLEE & WALTON, 625 Market street, under date of Sept. 30, reports as follows: Notwithstanding the excitement consequent to the recent suspensions of Jay Cooke & Co., E. W. Clarke & Co., together with many smaller brokers in our city, the Hardware trade has moved on with singular regularity. Nothing but a feeling of almost perfect confidence, in regard to the financial condition of the Hardware trade throughout the country, could induce the jobbers to solicit trade during the two weeks we have just passed through. The jobber, with his ledger open before him, can scarcely trace a charge where goods have been bought upon speculation during the last nine months. The long credits, which existed at the time of all former panics, have not existed during the past few years, consequently neither jobbers nor country merchants, who have conducted their business properly, can suffer materially, providing the prevailing opinion, that the money trouble has spent its force, be correct. We must necessarily suffer inconvenience. We must also suffer, in some cases, where parties wait for an opportunity of this kind to delay payments, but if the proper course is pursued by the entire trade, of reducing their indebtedness in every possible way, and for the present buying only for immediate wants, we think everything permanently disastrous can be avoided. Unlike the mercantile community, many of the existing and profitable railroads have been expanding upon borrowed money, and from this the merchants in our city have suffered for the last year, owing to these railroad companies constantly having their paper upon Third street, offering 12 to 15 per cent. per annum, for money. The inducement was great, to parties who had money, consequently a scarcity of money existed when merchants were in need. Millions of money have been thus taken from a channel where the merchant formerly relied upon. In addition to this, less profitable roads came upon the market, offering their paper at a greater discount, and it did not even end there. New roads were being built, some of which cannot possibly pay the interest upon the investments for thirty years to come, and nothing but speculation could have induced sensible men to take hold of them, and in taking hold of them millions of money have not only been invested, but sunk. New roads have been projected at a cost of fifty thousand dollars per mile, which not only could not possibly pay the interest upon the amount, but we doubt if they could pay the running expenses alone. Of course these large amounts have been withdrawn from circulation, and sanguine persons have lost their funds. We trust the recent explosion will be the means of putting a stop to these rash speculations, and cause innocent parties to consider before investing their funds. We make changes upon Ames' Shovels and Spades, Oct. 1, to new list, discount 10 per cent. The new list upon Plated Spoons and Forks has been adopted, which is an advance of nearly 33⅓ per cent., upon which a discount of 30 per cent. is quoted. German Silver Spoons have also materially advanced, being about 40 per cent. upon the old list. We adopt the new list with discount 15 per cent. Britannia Spoons are a trifle lower. This will induce parties to take hold of these, coming immediately upon the advance of Plated and German Silver. English Proved Coil Chain has advanced ¼ cent. per pound. There is also a great scarcity in the market, although the Common Chain can be had in any quantities. Brass Locks have declined about 10 per cent. Wrought Butts are a trifle lower. We quote Narrow Wrought Butts at discount, 30 and 5 per cent. Table Hinges and Back Flaps, 30 and 5 per cent. Loose Joint, 35 and 5 per cent. Other goods remain without change in the market.

PITTSBURGH.

PITTSBURGH, Sept. 27.—The money panic has had a very perceptible effect on the Pig Iron trade, more so than was generally expected. To use a common expression, the bottom seems to have dropped clear out of the market within the past week. The sales reported did not aggregate much over a tenth of those of the preceding week, although there may have been some operations, as there often are, withheld for reasons best known to the parties interested. It is evident, in view of the large falling off in the demand for Pig, that consumers are apprehensive in regard to the future, and it is almost certain that business will be very much restricted until the financial outlook becomes considerably brighter. Prices, as compared with last week, are without quotable change, although the feeling, in view of the very sudden falling off in the demand, is weaker, and those who had entertained hopes of an early advance, are, as might be expected, considerably disappointed. Choice Open Red Short (Western) Mill Irons may be fairly quoted at $34, 4 mos., although there are some fancy brands that are still held at $35; White and Mottled, $30 to $32, according to quality; No. 1 Foundry, Eastern, $41 to $42; Western, $38 to $40; No. 2 Foundry, Eastern, $36 to $37, Western, $32 to $34. Charcoal Irons, quiet and unchanged; they are so much higher than other irons that there is but little of them being consumed. We continue to quote at $45 to $50 for Warm, and $60 to $65 for Cold Blast. Blooms quiet and nominally unchanged, ranging from $95 to $110, according to quality. The receipts of Pig from the East continue very limited, not exceeding 12 to 15 cars per day, which is owing to the fact that there is no margin here, and there is little or none arriving from the West, except as it is sold and ordered in by the brokers. Producers feel, particularly in the present condition of affairs, that they had better keep their produce at home until it is wanted, and in this they are acting wisely. This has been a hard year on financial men, and the indications just now are that it will wind up even worse than it opened, although it is to be hoped that it will take a turn for the better. The market for Finished Irons remains pretty much as noted in my last report; about the only new feature to notice is that orders have, so it is said, slacked up somewhat, but this was not unexpected. However, the mills are still busy, as they are all sold ahead of their production. Prices remain about as last quoted; actual selling rates on the basis of 3 cents and 3 tenths to 3 and 4 tenths. A meeting of the Iron Association was convened on Wednesday, at which the present and prospective condition of the trade was freely canvassed. Some changes in the card had been contemplated, but it is thought best, in the present unsettled condition of money matters, not to disturb it. The Nail trade continues quite active and will continue so, providing the panic now prevailing subsides soon. The factories are all reported full of orders. Stocks, both here and at Wheeling, are reported light, and the recent advance is fully sustained—$4·50, with 12½ cents per keg off on lots of 100 kegs and upward, and 2 per cent. discount for cash. If the money market should continue to work close it will have a bad effect on the Iron trade, as most of the mills are largely dependent upon the banks for accommodations, and some of them would be unable to continue operations if discount were denied any length of time. There is a continued good demand for Steel; the mills are nearly all reported busy, but there has been no change in prices. The Window Glass trade is quiet, but prices are firm, in view of the fact that the factories have not started up, and there is no telling now when they will. Stocks of ordinary sizes, although steadily being reduced, are ample; but of irregular sizes the supply is almost exhausted, and orders for these in most instances cannot be filled. Discounts may be quoted at 60 and 5 to 60 and 10 per cent. off regular list.

The *Commercial* of the 27th inst. says: The financial panic which has prevailed the past week has had the effect to stop all demand for raw iron, except for such lots as were absolutely necessary to keep the mills in operation. The transactions are, therefore, limited to small lots, and do not amount in the aggregate to more than one-fifth as much as last week. We are reported the following sales:

BITUMINOUS COAL SMELTED FROM LAKE SUPERIOR ORE.

100 tons gray forge	$33 25	4 m.
100 tons gray forge	34 00	4 m.
100 tons white and mottled	32 00	4 m.
50 tons gray forge	34 00	4 m.
50 tons fancy	35 00	4 m.
50 tons foundry	36 00	4 m.
50 tons gray forge	34 00	4 m.
50 tons white	31 00	4 m.
10 tons white and mottled	30 50	4 m.

ANTHRACITE.

100 tons gray forge	$30 00	4 m.
100 tons gray forge	32 00	4 m.
50 tons mottled	30 00	4 m.
100 tons gray forge	32 00	4 m.
50 tons No. 1 foundry	40 00	4 m.

CHARCOAL.

176 tons No. 1 foundry	$48 52	4 m.
50 tons No. 2 foundry	45 00	4 m.
21 tons cold blast	68 00	4 m.

BALTIMORE.

Messrs. WYETH & BROTHER, Iron and Steel merchants, corner of South Charles and Lombard streets, report us the following prices, under date of Sept. 30, 1873: The stringency in money matters, and difficulty in making collections, have been much felt during the past week, but with all a fair average business has been done, at full quotation figures, and confidence being rapidly restored.

AMERICAN REFINED BAR IRON.

1 to 6 wide by ⅜ to 1 thick	3¼c. to 4c. per lb.
1 to 4½ wide by 1½ to 2 thick	3¼c. to 4c. "
Round and square, ordinary sizes, from ⅝ to 2 inclusive	3½c. to 4c. "
Hoop Iron, 1½ wide and upward	5¼ to 5½c. per lb.
Band Iron, from 1¼ to 4 in. wide	4⅜ to 4¾c. "
Horse Shoe Iron ⅝ to 1 wide by ⅜ to ½ thick	5 to 5½c. "
Norway Nail Rods	8¼ to 8½c. "
Black Diamond Cast Steel, Flats, Squares and Octagon, ordinary sizes	16½c. "
Machinery Steel	11½c. "
Cast Spring Steel	11c. "
Homogeneous Steel Plate	13c. "
Perkins' Horse Shoes, per keg of 100 lbs	$6 37½
" Mule Shoes " "	7 87½

Common Horse Nails, from 14c. to 18c. per pound.

10	9	8	7	6
23	24	25	26	28c. per lb.

Putnam Horse Nails..23 24 25 26 28c. per lb.
R. R. Spikes.....5¼ by 9-16 at 4¾c. to 5c. per lb.

LOUISVILLE.

Mr. GEO. H. HULL, under date of Sept. 29, writes us as follows: There seems to be an improved feeling in the market, though quotations remain unchanged. The usual time, four months, is allowed on quotations below:

HOT BLAST CHARCOAL.

No. 1 F'dry, from Hanging Rock Ores	$48·00 @ 50·00
" 2 " " " "	45·00 @ 46·00
" 1 Forge, " " "	36·00 @ 37·00
" 1 F'dry, from Tennessee Ores	46·00 @ 48·00
" 2 " " "	43·00 @ 45·00
" 1 Forge, " "	36·00 @ 37·00
" 1 F'dry, from Alabama Ores	48·00 @ 50·00
" 1 " " Iron Mountain Ores	50·00 @ 52·00

HOT BLAST STONE COAL.

No. 1 F'dry, from Missouri Ores	45·00 @ 46·00
" 2 " " " "	41·00 @ 43·00
" 1 Forge, " " "	34·00 @ 35·00

COLD BLAST CHARCOAL.

Car Wheel from Hanging Rock Ores	60·00 @ 62·00
" " Tennessee Ores	58·00 @ 60·00
" " Alabama Ores	60·00 @ 62·00
" " Georgia Ores	60·00 @ 62·00
" " Missouri Ores	58·00 @ 60·00
" " Kentucky	60·00 @ 62·00

CINCINNATI.

Messrs. ADDY, HULL & CO., under date of Sept. 29, write us as follows: Trade is somewhat checked by the state of financial matters, buyers manifesting a disposition to hold off from making large purchases until matters are more settled. The consumption goes on steadily, however, and there is a moderate demand for current wants.

HOT BLAST CHARCOAL.

Hanging Rock No. 1 ₱ ton	$47·00 @ 48·00—4 mos.
" " No. 2	43·00 @ 45·00—4 mos.
" " Forge	35·00 @ 36·00—4 mos.
Tennessee No. 1	44·00 @ 46·00—4 mos.
" Forge	35·00 @ 36·00—4 mos.
Alabama No. 1	47·00 @ 50·00—4 mos.
Missouri No. 1	49·00 @ 56·00—4 mos.
" No. 2	44·00 @ 45·00—4 mos.

HOT BLAST STONE COAL.

Missouri No. 1 ₱ ton	$46·00 @ 47·00—4 mos.
" Forge	35·00 @ —4 mos
Ohio No. 1	42·00 @ 44·00—4 mos.
" Forge	34·00 @ 35·00—4 mos.
Scotch Pig, No. 1	

COLD BLAST CHARCOAL.

Hanging Rock Car Wheel ₱ ton	$60·00 @ 65·00—4 mos.
Missouri " "	60·00 @ 62·00—4 mos.
Kentucky " "	58·00 @ 60·00—4 mos.
Tennessee " "	58·00 @ 60·00—4 mos.
Georgia " "	60·00 @ 63·00—4 mos.
Alabama " "	60·00 @ 63·00—4 mos.
Machinery and Forge	58·00 @ 60·00—4 mos.
Blooms	112·00 @ 115·00—4 mos

The Reported Sale of Bar Iron in England.—The following letter from W. S. & N. Caine, gives the truth about the reputed export of 100 tons of American Bar Iron to England, and will be read with interest. It appeared in the Liverpool *Daily Post* of September 18th:

SIR—We notice that the article which appeared in your paper of Tuesday, referring to the purchase of 100 tons of American bar, has been extensively referred to by the English press. We think it our duty at once to inform you of the whole facts from the commencement, so that those who are interested in the question may be enabled to judge fairly and impartially of the whole merits of the case.

On the 19th of August last a respectable house in this town informed us that they had received a letter from a firm of iron merchants in New York, to the effect that they were desirous of exporting to this country a quantity of American bars, feeling assured that the quality and price would be such as to induce English buyers to import American iron.

There having been considerable discussion in the trade, both on this side and in America, as to the surprising cheapness with which the American iron-masters could produce their iron, we determined to test the matter by purchasing 100 tons at £11. 10/ per ton, delivered here—5/ less than the ruling price here. The order was accepted by the agent, although, at the time, we had very little confidence that it could be carried out; so much so, that we requested him to ask for a confirmation by cable if the order was not accepted. This, however, was never received. On Monday last, on the arrival of the New York papers bearing dates, 1st, 2d and 3d inst., we found a series of articles relating to the iron trade of the two countries, and a statement of the fact in the New York *Times* of the 3d, that Messrs. Jackson & Chase had accepted an order of 100 tons of merchant bar iron from Liverpool. From the time we made the purchase up to last Monday we had carefully abstained from making it known, not wishing to do so until we had actually received the iron, although we had mentioned it privately to several friends in the trade. When the New York papers were received here, and the articles read, the secret went out of our keeping, and became a subject of talk on 'Change, as it then became known that our firm were the purchasers.

This morning, however, the gentleman who sold us the iron received a letter from his principals, Messrs. Jackson & Chase, of which the following is an extract;

NEW YORK, September 6.

Your letter dated 21st ult., duly received, and we have delayed reply to see if we could meet your figures. Although prices are low with us, and we are anxious to fill an order for your market, yet it could not be done at £11. 10s. without some loss. We regret not being able to execute your order, but will keep you advised of the probabilities of being able to meet your views. There has been no small stir in our city since it came out that we got an order from England for 100 tons of iron. All sorts of rumors have been flying about, and the newspapers got hold of it, and there has been much discussion on the subject. While we would be pleased to make such a shipment, we do not anticipate being able to do so unless prices are maintained on your side and go down on this. It is not to be expected that the condition of the trade should hold so that any extensive shipments could be made to England for some time to come. But your people should not forget that ours is a remarkable country in the matter of resources for iron production, and the home competition will keep the prices at reasonable figures in the absence of any extraordinary demand, and such we have not now by considerable.

You will note that the transaction was published and commented upon by the American press on the 3d inst., but Messrs. Jackson & Chase's letter bears date the 6th inst.—allowing the New York papers to reach England, and extracts to be made from them into our papers, three days before their letter came to hand. Had Messrs. Jackson & Chase cabled the refusal of the order, or even written by return mail, there could have been no possibility of any misunderstanding.

Upon the general question, we may state that houses in England have been offered, during the last few months, English iron in bond at New York at prices which would leave a profit to bring back to this country. Whether we receive this 100 tons of iron or not—and there is no doubt we have purchased it—one thing is certain that the American iron trade has gone from us, and if their manufacture increases during the next two or three years as it has done in the last, there can be little doubt that the whole of our North American iron trade will follow.

As a matter of personal explanation, we are prompted to say that we have not courted publicity in this matter, and should have much preferred that no notice had been taken of the transaction until the iron had reached these shores.

No. 11 Warren Street, NEW YORK.

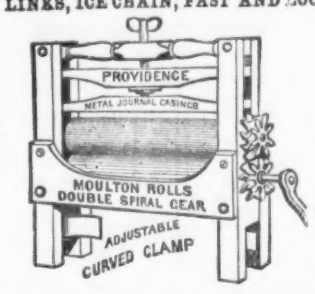
PROVIDENCE TOOL CO.,

Providence, R. I.,

Manufacturers of

SQUARE AND HEXAGON COLD AND HOT PRESSED NUTS, PICKS, BOLT ENDS, TURN BUCKLES, CHAIN LINKS, ICE CHAIN, FAST AND LOOSE JOINT HINGES.

Providence Clothes Wringer. Reliance Clothes Wringer

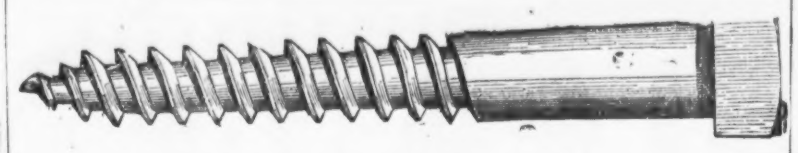


SHIP CHANDLERY OF All Descriptions.

Warerooms, 11 Warren, St. N. Y

H. B. Newhall, Ag't.

NEW YORK.



WM. H. HASKELL & CO.,

Pawtucket, R. I.,

Manufacturers of

Machine and Plow Bolts,

Coach Screws, Set Screws & Tap Bolts.

Warerooms, No. 11 Warren Street, New York.

H. B. NEWHALL, Agent.

No. 11 Warren Street, NEW YORK.

THE READING BOLT AND NUT WORKS.

OF

J. H. Sternbergh,

READING, PA.,

H. B. NEWHALL, Agent, New York,

Manufacturing my own stock of Iron from the Pig Metal, and making all sizes of both Square and Hexagon Nuts for ¼ inch Rods and upward to 2 inch Rods, inclusive, I am able to control quality, and offer a superior article in either large or small quantities, at the lowest possible price.

No. 11 Warren Street, NEW YORK.

RHODE ISLAND NUT CO.,

Providence, R. I.,

Manufacturers of

Patent Rolled Hexagon Nuts, Rods and Tubing.

The Patent Rolled Nut is superior to the best Forged Nut.

In the Patent Rolled Nut the iron is not cut away or punched aside to form the hole, but is rolled over a rod by heavy iron rollers. This process refines the metal. Its fibers are not torn and shocked. It is cut without injury to the tap. The even surface and the general finish of the Nut commend it to machinists.

Warerooms No. 11 Warren Street, New York.

H B. NEWHALL, Agent.

No. 11 Warren Street, NEW YORK.

LEWIS, OLIVER & PHILLIPS,

MANUFACTURERS OF

Merchant Iron & Heavy Hardware,

Carriage, Machine, Square Head, Bridge and Skein

BOLTS,

Nuts, Washers and Coach Screws, Harrow Teeth, Plow Handle Extension Rods, &c.

Bolts, Spikes & Wrought Iron Shapes,

For BRIDGES, DAMS, PIERS, BREAKWATER and other permanent structures, made promptly at a small advance in price of iron.

FOUNDATION BOLTS FOR DAMS, with ends slit by machinery.

Hook and Eye, Screw Hook and Strap, and Strap and T Hinges.

Originators and Patentees of their new line of

WAGON HARDWARE,

Comprising Patent Wagon Box Strap Bolts and Wrought Iron Bolster Plates, Large Head Wagon Rivets, Neck Yoke Eyes, King Bolts, Box Rods, Rubber Plates, Axle Bolts, Queen Bolts, Tongue Cap, Sand Band, Single Tree and other Labor Saving odd shapes of Iron. Send for Prices to

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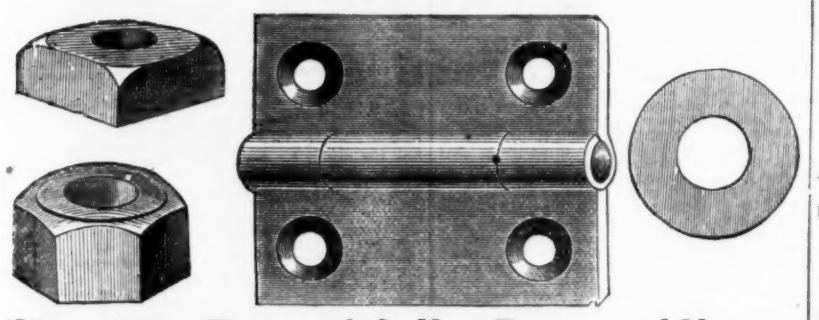

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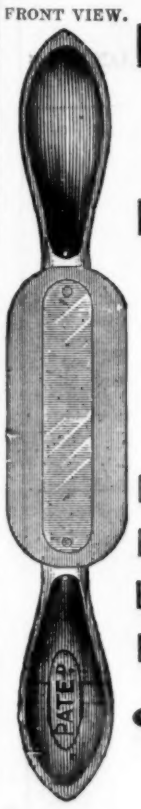

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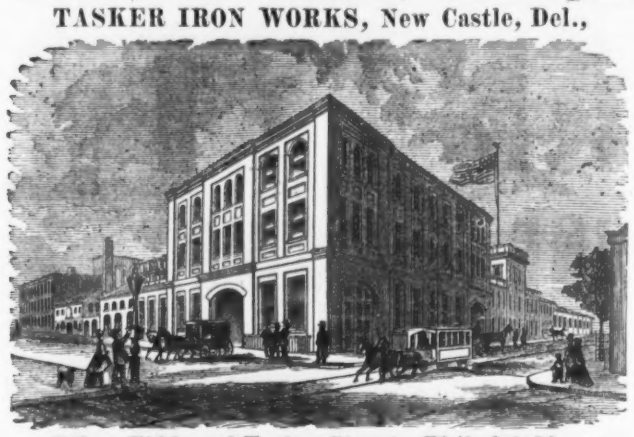

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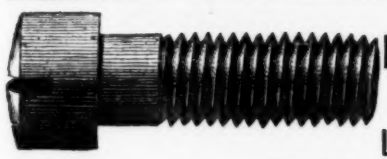

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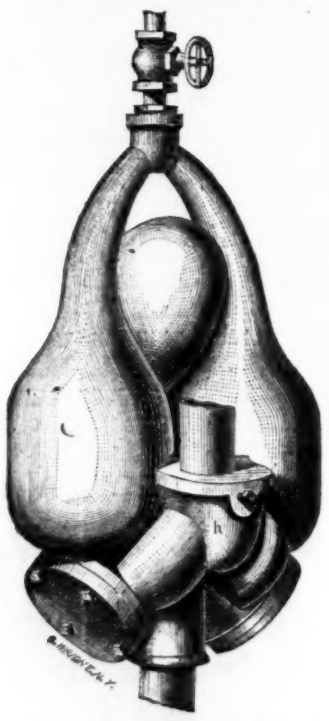

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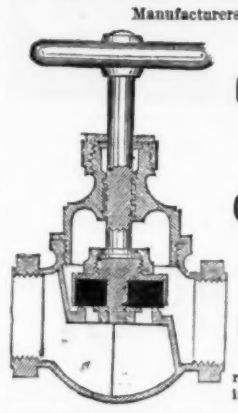

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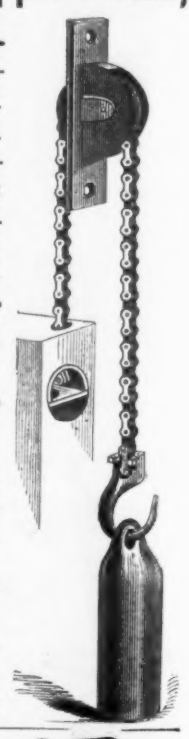

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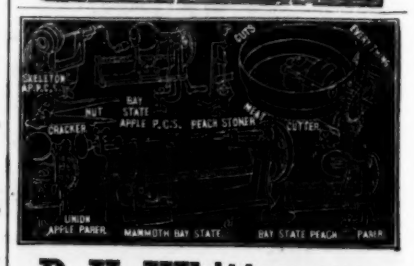

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Casks, 7
Anvils, 19
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Arms, cs., 12
Cutlery, cs., 1
Boker Hermann & Co.
Mdse. pkgs., 7
Beam & Murray,
Anvils, 200
Chains, cks., 28
Cooper, Harris & Hodgkins,
Cases, 1
Degraw, Aymar & Co.
Chains, 1
Drexel, Morgan & Co.
Files, cks., 2
Dickinson Henry
Casks, 3
Folsom H. & D.
Mdse. pkgs., 1
Field A & Co.
Mdse. pkgs., 32
Packages, 46
Anvils, 7
Friedmann & Lauterjung
Razors, cs., 4
Gueutal Geo.
Casks, 3
Harmar Wm. & Co.
Mdse. pkgs., 2
Hilger E. & Sons,
Casks, 3
Harmar, Hayes & Co.
Mdse. pkgs., 1
Hildick A. H.
Chains, cks., 17; pcs, 5
Vises, 12
Anvils, 15
Justice P. S.
Wire rope, coils, 1
King, Briggs & Co.
Casks, 3
Chains, cks., 9
Lau & Garlichs,
Mdse. pkgs., 8
Per. caps, cs., 7
Lamarche H.
Arms, cs., 7
Laughland & Co.
Wire, cks., 5; bdls, 32
Merchants Dispatch Co.
Arms, cs., 4
Casks, 6
Cases, 8
Miller W. J.
Casks, 4
Mason John W. & Co.
Wire rope, coils, 10
Noyes, White & Co.
Cases, 1
Per. caps, cs., 2
Robbins C. & Son,
Cases, 2
Russell & Erwin Mfg. Co.
Files, cks., 3
Schoverling & Daly,
Mdse. pkgs, 1
Arms, cs., 22
Schuyler, Hartley & Graham,
Guns, cs., 2
Spies, Kissam & Co.
Per. caps, cs., 2
Tillotson L. G. & Co.
Galvanized wire, lots, 426
Trippett J. & Bro.
Arms, cs., 12
Van Wart & McCoy,
Mdse. pkgs., 3
Von Cleff Bros.
Mdse. pkgs., 1
Western Union Tel. Co.
Gal. wire, lots, 541
Witte John G. & Bro.
Guns, cs., 19
Mdse. pkgs., 1
Windmuller L. & Roelker
Arms, cs., 14
Ward A.
Mdse. pkgs., 3
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Cases, 3

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Pig, tons, 50
Congreve Chas. & Son,
Rails, 1026
Fish plates, bdls., 715
Griswold J. A. & Co.
Pig, tons, 120
Henderson Bros.
Pig, tons, 600
Lang W. Bailey & Co.
Mdse. pkgs., 331
Laughland & Co.
Haybands, bdls., 751
Naylor & Co.
Fish plates, bdls., 500
Oelrichs & Co.
Casks, 160
Whitney A. R.
Flues, 1582
Order.
Scrap, tons, 538
Pig, tons, 1051
R. R. bars, 1985
Fish plates, bdls., 1147

Steel.

Cockayne J. W.
Bundles, 79
Cases, 3
Drexel, Morgan & Co.
Rails, 1007
Hogan John,
Casks, 2
Bundles, 45
Cases, 28
Naylor & Co.
Bars, cs., 27
Axles, 45
Rails, 2151
Vose, Dinsmore & Co.
Packages, 579
Order.
Bundles, 491

Metals.

Bartlett P.
Lead, cs., 2
Bruce & Cook,
Tin plates, bxs., 571
Douglas W. & B.
Spelter, bxs., 1
Dickerson J. S. & Co.
Tin plates, bxs., 919
Owen Thos. J.
Scrap, copper, tcs., 1; pcs., 3
Phelps, Dodge & Co.
Tin plates, bxs., 16,-451
Societe de Credit Suisse,
Tin plates, bxs., 350
Snow & Co.
Tin, bxs., 100
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Lead, pigs, 2197
Tin plates, bxs., 1763
Tin, slabs 100

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Wanted a founder for a charcoal furnace in the State of Virginia. Must be accustomed to making car wheel iron from brown hematite ores, with warm blast. Address, stating price and references,

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Believing that Bristol possesses advantages that few other towns possess, and that the attention of manufacturers need only be diverted in this direction, the Burgess and Council have enacted the following ordinance, viz.:

Be it ordained and enacted, by the Burgess and Council of the borough of Bristol, and it is hereby ordained and enacted by the authority of the same, That all manufactories which shall be erected within the borough of Bristol, during the period of ten years from and after the passage of this ordinance, shall for and during said period be exempted from the payment of borough tax.

Enacted into an ordinance at the Council Chamber, this fourteenth day of July, A. D. 1873.

CHARLES E. SCOTT, Burgess.
Attest: J. WESLEY WRIGHT, Clerk.
BRISTOL, Pa., July 21, 1873.

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By R. T. Hazell & Co.,

Store No. 118 Chambers Street.

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Our only authorized Agents to collect money for anything connected with our publications will invariably be provided with a letter of authority, specifying the particular object for which it is given, and bearing our official seal, and signed by the Manager.

The Merchants and Manufacturers Agency,
4 Warren Street, N. Y.

Special Notices.

For Sale, &c.

The Iron Age.

New York, Thursday, October 2, 1873.

DAVID WILLIAMS . . . Publisher and Proprietor.
JAMES C. BAYLES . . . . Editor.
JOHN S. KING . . . . Business Manager.

The Iron Age is published every Thursday morning, at No. 10 Warren Street, New York, on the following terms:

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New Zealand	8 00	4 00	2 0
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All communications should be addressed to

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10 Warren St., New York.

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CHARLES CHURCHILL & Co., American Merchants, 28 Wilson Street, Finsbury, London, England, will receive subscriptions (all postage prepaid by us) at the following prices in sterling: Great Britain and France, 25/; Germany, Prussia and Belgium, 33/4; Sweden, 50/. They will also accept orders for advertisements, for which they will give prices on application.

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The Panic and Its Effects.

Now that the panic is over, and we can reflect calmly upon its causes and consequences, we find in the situation much cause for congratulation, rather than despondency. With the single exception of the railroad interest, which has experienced an unhealthy and speculative expansion during the past few years, nothing has suffered seriously, and the panic, severe as it was, has found our commercial sytem sound and in a condition to resist successfully a shock which, had it found us in a position not strongly fortified against a crisis, would have scattered ruin in every direction. Again, we find that, even allowing for the effects naturally and inevitably attendant upon the collapse of the railway bubble, that there has not been at any time reason for half the excitement which has been developed, nor half the anxiety experienced in business circles. Not one banking or commercial failure of any consequence has been caused by insolvency. Even the firm of Jay Cooke & Co. has assets sufficient to enable them to pay their debts, although the Northern Pacific Railroad securities, upon which they have made large advances, may have to be left out of consideration. The National and Union Trust Companies are both solvent, though embarrassed, and Messrs. Fisk & Hatch, Howes & Macy, Henry Clews & Co., the National Bank of the Commonwealth, and many other suspended firms and institutions, will be in a position to render full justice to all creditors and continue business on a sound basis, as soon as public confidence is fully restored and good securities can be converted into money. But the best feature of the situation is found in the fact that the panic has not extended so far as to shake commercial credits, and that, beyond the temporary inconveniences which merchants have suffered from being deprived of bank facilities for more than a week, combined with the almost unprecedented scarcity of currency, business is not likely to be severely injured by it. On the contrary, there is reason to believe that its effects upon commerce will be ultimately, if not immediately, beneficial, and that much of the capital hitherto locked up in speculative ventures will now seek profitable employment in legitimate commercial enterprises. It is not to be wondered at, therefore, that the business community should have already regained confidence, and that, even in Wall street, the excitement should have subsided rapidly. Had the newspapers not fed the fires of public excitement, there is reason to believe that the trouble would not have extended as far as it did. It is too much, perhaps, to expect the editor of a newspaper to refrain from making appear as serious as possible anything which furnishes such interesting matter as a financial crisis; but it is not too much to expect that our business men and the intelligent community generally should have other warrant for their fears than newspaper reports, before concluding that the collapse of two or three inflated railroad schemes, and the consequent embarrassment of certain houses which had become involved in their efforts to carry those schemes through, had undermined the foundations of our commercial and financial systems and left them with nothing substantial to rest upon. A little judgment and common sense will often avert a panic which, if allowed to gain headway, may do serious mischief.

As to the effect of the panic upon business, it is difficult, as yet, to speak confidently. The opinion is general that it has seriously hurt the fall trade, and in many branches of commerce a season of unusual dullness is anticipated in consequence of the tightness of the money market and other causes tending to force a temporary economy of consumption throughout the interior. It is generally safe, however, to predict a better future for trade than the merchants foresee, especially after a serious disturbance of any kind in the financial markets, and we hope it will be so in this instance. As to the effect of the panic upon the iron trade, we have but little to say in addition to what we said last week—information subsequently gained not having materially changed our views. Undoubtedly the rail mills will be still further compelled to contract their production, and, in some instances, to suspend operations altogether, but there is no reason to anticipate a general stoppage, even temporarily. There will also be a general reduction of wages in rail mills, many of the companies having already notified their men of reductions of from ten to fifteen per cent., to which, under the circumstances, no opposition will be offered. Pig irons, especially those available only for mill use, are now in heavy stocks throughout the country, and it is probable that many of the furnaces running on these kinds of iron chiefly, will be compelled to restrict their production, or go out of blast altogether, until stocks shall have been reduced and a better market secured. Such a course is the one most likely to bring down the price of Northwestern ores, and enable the furnace men to make contracts for supplies on more favorable terms than are now obtainable, which will put them in a position to take profitable advantage of the first improvement in the demand for new supplies of pig iron. Whether the causes producing these results will be more ultimately beneficial than temporarily hurtful to our iron interests, remain to be seen: our own opinion is that more of good than evil will result therefrom. The natural result of the maintenance of low prices for pig and manufactured irons will be to close our markets still more effectually against foreign manufactured iron. Last year the consumption of the country was so great that we were obliged to import about as much iron as we produced to meet it. Under existing conditions we can produce iron more cheaply than we can import it, and it is but natural to suppose, therefore, that, so far as rails and ordinary merchant bar iron are concerned, the decreased demand will fall chiefly upon foreign iron. If this be so—and the continued maintenance of high prices in Great Britain, together with the recent advance in coal, seem to warrant the conclusion—it is probable that the consumptive requirements of the country will be great enough to keep our mills and furnaces busy as soon as opportunity has been afforded for a reduction of accumulated stocks; and as trade lost to England is not likely to be regained, so far as this country is concerned, we shall be more likely to profit by the causes now operating to check consumption than to suffer from them, in the long run. We must not forget, however, that in a country of such vast extent and such rapid industrial and commercial expansion, railroad building cannot suffer a permanent check, and that one of the results of the diversion of capital from railroads into other and more judicious investments for a time, will be to create a demand for increased transportation facilities which can only be met by the construction of new roads. It is to be hoped, however, that we have learned wisdom from our experience of the evils of stimulating railroad expansion by land grants and State aid, and of building them from the proceeds of the sale of mortgage bonds, leaving the stock to be divided among the speculators to whom charters are given—or more properly, by whom they have been purchased. We have had enough of this mortgage bond business, and we hope it has received a blow from which it will not recover.

Free Banking and More Currency.

Whatever differences of opinion may have hitherto existed regarding the relation between the volume of currency in circulation and the legitimate requirements of the country, we have had abundant proof during the past fortnight that the demand for a more abundant supply of some kind of an acceptable circulating medium is immediate and imperative. The disastrous panic through which we have just passed is due, in very great part, to the inability of the banks, under the law which restricts and hampers their operations, to expand their loans when such expansion was most urgently demanded by the business community. The relief afforded by the Treasury, in placing a large amount of legal tenders in the hands of financial institutions, alone enabled them to meet the demands of their creditors, and the promise of further aid from Washington has done more than anything else to restore confidence, for monetary panics invariably arise from a fear that money needed to meet pecuniary engagements cannot be had, and when that fear is in any considerable measure set at rest the panic abates. Had this relief been extended gradually during the past three months, there is reason to believe that no crisis would have been reached, and now that we have learned wisdom from costly experience, it is to be hoped we will not forget it as soon as the monetary danger is passed, and the necessity for radical changes and modifications in our national banking law ceases to be as clearly apparent as it now is

That we need more currency is the universal testimony of all but the money lenders, who reap their harvest of usurious gains when money is stringent and the banks unable to extend further accommodations to merchants. The rate of interest for the use of money is steadily on the increase throughout the country, and to conduct a business of any magnitude on a cash basis, or anything approaching it, is next to impossible. Everywhere we hear complaints of the difficulty of making collections, and both merchants and manufacturers are often compelled to tide themselves over seasons of monetary stringency by borrowing money at high rates, while waiting to collect good debts to an amount often far in excess of their immediate necessities. It is easy to devise ingenious theories to account for this condition of affairs, but the merchants, the manufacturers, and the farmers know that the principal reason for it is the want of a more abundant circulating medium. We have not space here to go into a comparison of figures: it is enough to know that about 10 years ago Congress fixed the amount of currency the country was permitted to have, but while the amount of this circulating medium has been steadily reduced by hoardings, destruction by fire, shipwreck, &c., the necessities of trade for currency have enormously increased—hence the necessity for a proportionate increase of currency. Such a condition of affairs as now exists is not without precedent, nor is it difficult to foretell what would result from the application of the only practicable remedy. In 1844 the British banking law was enacted which limited the amount of bank notes to be issued, and since that time Parliment has been compelled by the necessities of trade to thrice amend the law, each time authorizing an increase in the bank issues, without bringing upon the country any of the evils which are now threatened as certained to follow a "further inflation of the already redundant currency."

Upon its reassembling Congress will find itself compelled to give a definite answer to the demand of the whole people for free banking. By free banking is meant the abolition of all the restrictions and limitations by which national banking is made a close monopoly under the existing law, and the enactment of a statute allowing to any individual or corporation engaged in banking operations, notes under the same conditions—or, if possible, more liberal ones—as are now required of national banks. This is at once the easiest, safest and most efficacious remedy for the present condition of affairs that could be prescribed, and the people demand it of Congress. In a speech delivered in the House of Representatives, nearly three years ago, by Hon. Daniel J. Morrell, of Pennsylvania, occurs the following passage, which so well expresses the opinions of the large and influential class in favor of free banking, that we give it place:

> The only safe means of distributing and regulating the volume of the currency is through local banks which receive deposits and make discounts in accordance with the business requirements of the communities which they serve. Any other way of swelling or reducing the volume of currency cannot be healthful, and its effects must resemble the temporary stimulation of intoxicating drinks and the depression which follows a debauch. The national banks are in successful operation; men of all parties, professions and occupations are stockholders, and their management is free from political or sectional influence. Their officers necessarily have an accurate knowledge of the resources and necessities of the people and possess their confidence. Being independent of the national administration, yet subject to inspection, and liable to forfeiture of privileges which are abused, they are a check upon the Treasury, and the Treasury a check upon them.
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> That the banks have made large profits is chiefly owing to causes which have made all money capital productive, and is no evidence of the faults, but rather of the virtues, of the system. Make banking free, and it will cease to be unduly profitable. They will have only such profits upon their business and circulation as can be realized under free competition, money at the same time being plentiful.

If any obstacle to the operation of such a system exists in the loss which results to the banks from the disproportion which now exists between the value of bonds available for deposit to secure circulation, and the amount of currency which the treasury can issue upon them, the difficulty is one for which Congress can readily prescribe a remedy. All that the people of the country demand is that the banks shall be relieved from all burdensome and unnecessary restrictions and limitations, and that the business shall be made so far free that, if more currency is needed, the banks can obtain it for circulation upon terms that shall enable them to conduct their business with fair and reasonable profit. The necessity exists, a practicable remedy can be applied, public opinion demands that it shall be applied without unnecessary delay, and the party in power must either concede the reform or take the consequences of refusing to do so.

The German Union of Railway Administrations offer two prizes, of $2250 and $750 respectively, for something in the way of a practical car coupling apparatus which will obviate the necessity for placing a brakeman between the platforms. The invention submitted for competition must have been tried practically by one of the railroads belonging to the Union previous to the sending in of the papers, and the proposition for the award of the prize must emanate and be supported by one of the said railroads. The premium does not debar the inventor from patenting the invention and enjoying the benefit of the patent. The papers must so explain the invention by illustrations, drawings, models, etc., that an opinion can be easily formed of its quality, practicability and working, and must be sent in, carriage paid, to the head office of the confederation, Berlin, before the 1st of July, 1874. The examination of the competing plans, as well as the decision, whether general or in the form of an award of prizes, will be undertaken and decided by an examining committee, consisting of 12 members, appointed by the confederation. When we hear of American railroad managers thus stimulating inventive talent by the offer of rewards for necessary or desirable improvements, we shall conclude that a good time is coming for those who journey by rail. As it is now, the parsimony of railway managers, where lines are operated with one end in the Stock Exchange and the other in their own pockets, and their unwillingness to incur even a small expense in testing the merits of an invention offered them, is a discouragement to inventors and a bar to progress in railroading success.

Not to be outdone by England, the French government has appointed a committee to inquire into the state of the coal mining industry and the present and prospective supply of fuel. Among the means adopted for obtaining the desired information is the issue of a list of questions addressed to coal producers, consumers and dealers, who are requested to send in their answers by letter. The questions are twenty in number, and are designed to secure information as to the various sources and descriptions of coal consumed in France; the average price during each of the past five years; the causes and the effects upon industry of the existing scarcity; the possibilities of, and the hindrances to, increased production; and the deficiencies in the means of coal transport. No allusion is made to the changes in the rates of wages, nor to the profits of the trade, nor to the cost of production, but inquiries are made whether collieries produce all they might, and what is the extent of mines not at present worked. There are several French collieries which, for some reason, the concessionaires will not work, and as the Counsel General of the Saone-et-Loire has called upon the government to require concessionaires of unworked collieries either to abandon their grants or work their mines, it is probable that the inquiry is ordered with a view to ascertaining whether there exists a necessity for enforcing the working of mines now idle.

The Inter-State Industrial Exhibition at Chicago was opened and inaugurated on Thursday last, with appropriate ceremonies but, we are informed, with rather a meagre display of exhibits. The building, already described in some detail in these columns, is of brick, iron and glass, 800 feet long by 200 wide, with a floor space of about 2000 square feet. It has cost about $250,000, subscribed chiefly by the business men of the city, ostensibly with a view to encouraging the industrial and mechanic arts, but, like all other industrial exhibitions, to serve as an annual bazar for purposes of advertisement and trade. Investments in enterprises of this kind are usually profitable, if the exhibitions are well managed and made of general public interest, but we think there is danger that the thing will be overdone, if it has not been already in some parts of the country. Chicago ought to sustain an extensive and interesting industrial exhibition, and probably will do so, but we fear that is more than can be said of many other Western cities which have gone somewhat heavily into the show business.

In our trade report this week we publish a letter from Messrs. W. S. & N. Caine, of Liverpool, to the *Daily Post*, of that city, which throws some new light upon the reported purchase of 100 tons of American merchant bar by a Liverpool dealer. We confess that the facts of the case, whilst they do not surprise us, are very different from what we were led to believe. The statements with regard to the reported transaction which appeared in our issue of September 4th, were made by us in entire good faith, and upon what we considered specific and trustworthy information, imparted to the Editor in a conversation with both members of the firm in this city receiving the order. We give Messrs. Caines letter without further comment, but, should occasion demand, we shall have more to say on the subject.

New Publications.

THE PRACTICAL DESIGNING OF RETAINING WALLS. By Arthur Jacob, A. B. New York: D. Van Nostrand.

This is No. 3 of Van Nostrand's Science Series, and is an excellent example of a handy book for the practical engineer. Works which present the rationale of the processes of mathematical investigations, and present in plain terms the application of the principles, are by no means too common; and this one subject of "Retaining Walls" is so overloaded with abstruse mathematical labor in most works on engineering, that the exact conclusions of the author are hard to determine.

We have here, however, just so much of the theory as to indicate the nature and amount of the forces to be met, and the accepted method of meeting the conditions under all ordinary circumstances.

Appended to the essay are some tables; also, two excellent methods of solving by graphical construction problems relating to retaining walls.

PROPORTIONS OF PINS USED IN BRIDGES. By Charles Bender, C. E. New York: D. Van Nostrand.

This little volume, No. 4 of the series above mentioned, is a practical treatise of interest to engineers. A number of diagrams, illustrating the text, greatly assist the reader, and render the essay valuable to beginners, as well as to experienced engineers. As the author remarks in introducing the subject, it is not the least of the merits of skeleton structures, such as are built by the best American constructors, that the proper strength of every part can be accurately calculated. The essay is especially devoted to the consideration of three questions: The law of distribution of pressure caused by the tie bar on the bearing surface of the pin; the law of distribution of shearing strain over the cross section of the pin; the value of its bending moment in any of its sections.

Scientific and Technical Notes.

Among the many excellent contributions to the French Academy for the Advancement of Science, which recently held its Congress at Lyons, was a paper by Mons. Arine Gerard, Professor of Chemistry at the Conservatoire des Arts et Metiers, on

RECENT PROGRESS IN THE CHEMICAL INDUSTRIES,

from which we condense the following: It was at Lyons, forty years ago, that the process of manufacturing sulphuric acid was introduced, by which the ever-increasing demand is now satisfied. Sulphuric acid is a product of so great an importance that certain imaginative philosophers have believed that its consumption indicates a standard of civilization. It is, in fact, the basis upon which all industries are supported which call chemical reaction to their aid. Heated with salt, sulphuric acid yields sulphate of soda, and cholrohydric acid, that is to say, the important agent in the fabrication of soap, of glass, and of paper, in the processes of bleaching, of dyeing, etc. Heated with saltpetre it produces nitric acid, the active agent in those splendid colors used so largely in the operations of dyeing. In short, we may safely say that sulphuric acid is one of the most important agents throughout the whole range of chemical industry.

Originally sulphuric acid was manufactured from sulphur brought from Sicily; about 20,000 tons of this substance annually were sufficient to supply all the sulphuric acid used throughout Europe; to day more than 270,000 tons have to be manufactured to meet the yearly demands.

It was at Saint Fons, near Lyons, that the process of making sulphuric acid from pyrites was

perfected. This was in 1830, and since then this process has spread throughout the whole of the world. Everywhere through England, France, and Germany, the whole of the sulphuric acid absorbed is produced by the combustion of the pyrites analogous to those of the Rhone and Gard.

But the industries which rely upon this agent have also made a progress no less remarkable during the past few years.

Marseilles is surrounded with manufactories and workshops, while chemical factories are very numerous, and it is there that the salts from the marshes are decomposed to produce the millions of tons of alkali for the soap trade, and chlorohydric acid. This latter was previously lost, escaping by the chimney shafts of the works in immense volumes of smoke, which interfered with the whole of the agriculture in the neighborhood. To-day, with the exception of some insignificant works, these volumes of smoke are never seen. The acid, easily condensed in the works, is converted into a valuable product. This detail in chemical progress was perfected in this country in consequence of the legislation of 1864, which imposed on the manufacturers of chemical products the condensation of 95 per cent. of the chlorohydric gas formed. Within four years the process was practically perfect, it rapidly spread over the Continent, and it is needless to say that it has proved a source of enormous profit to manufacturers, as well as an almost incalculable benefit to agriculturists and health. Once produced in large quantities it was necessary to find for it a profitable use, and it now renders invaluable service in bleaching operations, and in the manufacture of paper. The demand has become so great for these products, which but yesterday, as it were, were a serious nuisance, that now the skillful utilization of chlorohydric acid has become a regulator of profits in general industries.

Moreover, the efforts of research tend to-day to perfection in the manufacture of the bleaching agents. In England Mr Weldon, regenerates the manganese, which serves to transform the chlorohydric acid into chlorine. Mr. Deacon takes from the air itself the oxygen necessary for this transformation, and announces the production of chloride of lime, no longer from 14/ to 16/ the hundredweight, but at less than 10/.

Sulphate of soda, obtained from marine salts by sulphuric acid, is often converted into carbonate of soda. This is done by heating the sulphate in a reverberatory furnace to a temperature of about 1000 degrees (Cent.). The sulphate is mixed with chalk and coal, and the whole mass is kept in agitation. This part of the process is the most trying, but, as in iron puddling, efforts are being made to substitute mechanical means. In many large establishments revolving furnaces are in operation, consisting of horizontal cylinders about 16 ft. long, and 10 ft. in diameter, and to which a rotary movement is imparted by a small steam engine. This cylinder, exposed to the full action of heat, is charged with the materials, which are kept in a continual state of agitation by the rotation of the cylinder, and are thus automatically transformed without any intervention on the part of the workmen.

The combinations of potassium, like those of sodium, also play a most important part. Their production has also been greatly developed of late years. Potash was formerly obtained almost exclusively from wood ashes, but as the demand extended other means of supply were sought after. It is no longer employed in France, Austria, nor Germany; and only perhaps in America, in Hungary and Russia, is the process of gathering the potash from wood ashes now practiced.

It is the beet root, so largely cultivated on the Continent for the manufacture of sugar and alcohol, that furnishes potash, instead of wood, as in old times. One of the residues in the treatment of the beet root is, of course, molasses, and in this are found all the potash contained originally in the beet root; it is from the molasses that M. Dubrunfaut has succeeded in extracting it. Exposed to fermentation, the molasses is, in special establishments, transformed partly into alcohol, collected by distillation, and partly it is evaporated and calcined in a reverberatory furnace, yielding all the potash, which, during its growth, the beet root had absorbed and fixed within its tissues.

This process, which dates from 1840, produced actually about 6000 tons of potash compounds annually, representing a value of £120,000, but corresponding to only about one-half of the consumption in France.

Sea water contains considerable chloride of potash, and, thanks to the investigations of M. Balard and MM. Merle and Salynches, the difficult problem of extracting the potash from this source received, in 1860, an industrial solution, after twenty-five years of patient labor. The process requires the aid of considerable cold, of refrigeration, in fact. The climate of the Mediterranean does not comply with the necessary conditions, hence the necessity for freezing machines. But scarcely had the establishment of works of this industry been completed, when the discovery of the mines of Stassfurt, in Saxony, dealt a terriole blow to this industry.

Above the thick deposits which these mines contain, science discovered, arranged regularly in successive beds, all the saline components contained in the salt marshes of the south of France. The new mineral, calamite, dissolved in water, and subjected to heat, yields immediately almost pure chloride of potash. The appearance of this product of the Stassfurt mines in the European markets produced a great revolution, and the price sunk immediately to less than half. By this blow the French industry in this direction appeared paralyzed; but M. Merle and his collaborateurs, who had struggled so long, addressed themselves again to the task, and studied the economical production of the product, combining with the influence of cold, the secondary action of properly applied heat, and with properly designed apparatus advanced slowly but surely in the path of progress, until, developing a new process, they saw success crown their efforts. At present the French potash industries extract from the marshes of Commarque 1000 to 1200 tons of potash compounds, which, both in price and quality, compete successfully with that produced from any other source.

A correspondent of *Engineering*, writing from Germany, says that the use of

AIR-DRIVEN ROCK BORING MACHINERY

is increasing on the Continent, and thus describes the operations of the Sachs' rock drill, at the Gouley mine, near Kohlscheidt, belonging to the United Coal Company, of the Wurm district, in Rhenish Prussia. A cross-cut, over 1640 ft. long, 6·8 ft. high, and 6·8 ft. wide, was driven there, at a depth of 852 ft. from the surface. The rock consists of hard quartz sandstone, alternating with hard shales, and contains a few coal seams. The point of the tool was at first chisel-shaped, and it happened sometimes that the holes were not bored straight, in consequence of which the tool was liable to jam and to cause the breaking of the valve gear; but since the points have been made Z-shaped, such accidents have never again occurred. In very hard rock, which entirely consumed the points of the tools, the machine would bore from 29·6 in. to 41·60 in. in half an hour; when two men, under similar circumstances, boring by hand, could only advance 10·40 in. in eight hours. When the material is less hard, 25·12 in. to 29·6 in. are drilled in 6 to 7 minutes, the changing of the tool requires 2 to 3 minutes, the removing of the machine 4 to 5 minutes, and a hole of 28 in. depth, which requires one change of tools, can thus be drilled in 12 to 15 minutes. In hard shale the machine advances 4 in. to 4·5 in. per minute of actual boring time, with 350 to 400 blows. The compression of the air is equal to 4 atmospheres in the compressor, and 3½ in the machine. The pipes through the shaft are made of cast iron 4·20 in. diameter, those through the levels are of wrought iron and 3·6 in. diameter; 12 to 14 holes, divided over the surface of the heading, are generally fired at the same time. The compressor is worked with water, as dry compressors get inconveniently hot; the expenses per running metre of cross-cut are as follows: Wages 39/, repairs 3/, interest and amortization on a capital of £165, 3/, expenses of compressed air, £1. 5/, or £2 6/6 in all; while the expenses of driving by hand power are on an average £3. 3/, and even reach up to £7. 10/ per each current metre.

Another boring machine which has undergone trial is that of Burleigh, made by Craven Brothers, of Manchester. It came originally out in America, under a somewhat different form, and was employed in driving the Hoosac Tunnel, in Massachusets. In the autumn of 1871 it was tested at the Turin Industrial Museum, when a sample of the smaller size, weighing only 176 lb., bored in 7 minutes, in hard granite, a hole 16 in. deep and 1·6 in. diameter, and also perforated with ease such hard kinds of rock as quartzite, gneiss and others. In 1872 the same machine was tested by M. Colladon, at Geneva, when a large block of hard granite from the Arve Valley was perforated with a hole 1·52 in. diameter and 1·8 in. to 2 in. deep a minute, under 4 atmospheres' pressure. The piston and chisel receive a turning movement with each upward stroke, when the piston slides on a slightly curved guide rod, which is at its end provided with a ratchet wheel and pawls, and thus prevents their turning backward at the downward strokes. This arrangement is, however, not original, for it was patented in England some years ago, by John Darlington.

A third successful machine was exhibited at Vienna by John Cockerill & Co., of Belgium, It is the Dubois-François rock drill, shown in four specimens, which are mounted on little carriages, as used in some English collieries. This machine is in Belgium supplied with compressed air of 2 to 2½ atmospheres, has a stroke varying from ·80 in. to 7·20 in. in length, and is said, in hard coal sandstone and coal shale, to drill a hole 1·6 in. to 8 in. deep in a minute, when it makes from 200 to 250 strokes. The driving of a cross-cut through sandstone, 7·21 ft. high and 7·21 ft. wide, has cost per current metre 41/6, when four machines were used in turn, and the driving advanced three times as fast, as when done in the ordinary way. We understand that this machine is next to be tried at the Gothard Tunnel. There is no doubt that rock boring machines have been much improved during the last ten years; there remain, however, still some objections to be overcome before their use can become general. The machine of the future should have less weight than hitherto; there should be no heavy frame to it, and should be such as to allow of setting it to work in every direction, upward, downward, horizonal, or inclined; the pressure used should be equal to at least 4 atmospheres; the number of strokes should be increased at least twofold; as it is now, however, the length of stroke should be shortened; the valve and slide gear must be simplified, as they are always liable to get out of order and consume a great amount of power; and, lastly, to avoid complications, the self-acting forward movement of the cylinder should be dispensed with, as this is better done by the hand of the man who has to attend the machine.

Another English Coal Panic Threatened.

The Sheffield *Independent* of September 13th says:

We are threatened with another coal panic, as unfortunate for the customer and as profitable for the colliery owner and the coal agent, as that which occurred last year. It may be remembered that at the beginning of September in last year there was a scarcity of coals, and an advance of prices was resolved upon. The public took the alarm, and began ordering in stocks with more zeal than discretion. The sellers took advantage of this enormous influx of orders, and in September alone prices were advanced no less than four times. The demand continued, the cost increased, and eventually orders were only booked to be executed at current quotations. Prices reached their maximum in February of the present year; and then as the spring advanced they became easier. During the summer anxious attention has been given to the coal market—not only on the part of manufacturers, but of consumers generally. Almost everybody has expected that with increased sources of supply on the one hand, and a slackening trade and warm weather on the other, we should have coals, if not as cheap as they were two years ago, at least at moderate cost. They have, to a very great extent, acted on those expectations, and have refrained from ordering except to meet immediate wants. Indeed, we have heard of respectable householders who, confident of a speedy and large reduction of prices, have contented themselves with having coals by the barrowful! These are meeting with disappointment, as at some collieries the prices charged last April have been maintained all the summer. More than a month ago the announcement was made that at one colliery in this neighborhood there had been an advance of 1/ per ton. Such a course might have been perfectly justifiable, owing to an increasing demand, or it might have been done with the view of bringing up reluctant customers and stimulating orders. Whatever the motive, the result is beyond dispute, and we are threatened with a repetition of the experience of last autumn. Customers, alarmed at the prospect of again having to pay famine prices, are ordering in stocks for winter far beyond what is at all necessary; and in that way are doing their very best to bring about the results they so much fear. At some offices, when the demand was found to be so much increasing, instructions were given that orders were only to be taken from old customers, and for three or four weeks that rule has been acted upon. When persons found their orders refused they naturally became the more anxious to place them; and by communicating that anxiety to others the demand has been further stimulated. Now, if you speak to a colliery agent respecting trade, his answer most invariably is: "We are nearly pulled out of the place for coals." The fact is, the demand now from customers in this neighborhood is so great that at some collieries "not an ounce of coal can be got into wagons to send away." There is by no means as large a quantity of coal in stock now as there was this time last year, and there is a more pressing demand. Under these circumstances it is hardly matter for surprise that prices have begun to move. In London they have been going up for some weeks, and they are now as dear as they were last December and January. In Sheffield there is no combined movement on the part of the colliery owners and agents to put up prices; but the practice appears to be for each to take that step as he finds the demand more healthy. It has come to our knowledge that the house coals from one colliery have gone up 10d. per ton, those from at least three other collieries 2/6 per ton; and the coals from other pits will no doubt also be dearer as the demand for them increases. Prices now vary from 15/6 to 23/6 per ton, undelivered. The agents for the coal from the collieries of Earl Fitzwilliam have received notice of an advance of 1/ per ton all round. The seconds supplied to the agents of the Wharncliffe and Silkstone colliers have been increased by 2/ per ton. The agents for other collieries are expecting information of similar advances. There has been no alteration in the cost of coke; and it is stated that endeavors will be made to keep down the figures for coal for manufacturing purposes.

So far we have confined ourselves to facts respecting the present position of the trade—facts, we venture to say, that either are or will be painfully known to most householders. Much more difficult is it to ascertain with any degree of reliableness what are the prospects of the trade for the winter. Upon this point opinions are very much divided. There are those who say that no good and valid reason can be assigned why the prices of mid-winter have been maintained throughout the summer; that on several occasions they were on the very verge of dropping, and that only by a series of fortuitous circumstances were they kept up. They also say that the demand now springing up so rapidly is unreal—fictitious—and could not exist if customers would order in moderate quantities, and not under fear of having to pay dearly for their delay. They say the public are positively playing the game of the coal owner and his agent, and are furnishing them with some show of reason for running up prices, and that when the present "spurt" is over prices will go down. Then there are those who say that the present is a legitimate and to be expected demand, and that although many more collieries have been opened, and the men employed in them are working as steadily—when it is not Doncaster race week—as can be expected, yet the supply falls very much below the demand. Railway trucks stand and boats lie at the pit mouth for days and even weeks, waiting their turn, and coals to fill them cannot be obtained. In the face of these facts they say prices will go up, and that coals will be dearer this winter that last. These are the opinions of men in positions to judge, and we lay them before our readers without attempting to reconcile them.

Steel Ornaments. — The fashionable cut steel and diamond-steel ornaments are very handsome, and also expensive, a single ornament sometimes costing $6 at the wholesale houses. The steel aigrette for the front will perhaps be the most fashionable ornament of bonnets for young ladies. A very slight beading of cut steel is in excellent taste around the brim of black and other dark velvet hats. The new jet ornaments are exquisitely fine. They are made of the tiniest beads sewed on black jet, in patterns of leaf and flower, or blocks or Greek squares. There are jet cornets, either very massive looking or else as light as lace, jet plumes, wings, aigrettes, bands of jet passementerie, all beads, like embroidery and beautiful diadems with drooping fringes. Simple hoops, merely large rings of jet or of cut steel, are used amidst loops of silk or ribbon. Slides of jet and steel mingled are shown in square and oval shapes, and there are horse shoes of jet with cut steel nail heads in them.

Co-operative Engineering in Glasgow.

We take the following interesting account of one of the most successful co-operative manufactories in Great Britain from *Iron*:

The principle of productive co-operation, as applied to the engineering and shipbuilding trades, is now making very decided progress in Scotland. A limited liability company, which was started by a number of working men, in Glasgow, about ten or twelve months ago, for the purpose of carrying on mechanical engineering and several cognate branches of trade, has already become a practical success. That success, however, is not entirely due to the Glasgow artisans, for no sooner had their movements become public, than they found that other artisans resident at Dumbarton were also imbued with the co-operative idea, and that they had resolved on establishing a co-operative ship building and marine engineering business in that important seat of those two industries. Being believers in the doctrine that "union is strength," they resolved on fusing their two enterprises together, and on first trying their fortune as productive co-operators in Glasgow. They got their company thoroughly organized, made it known throughout the principal seats of the engineering trades in Scotland, and appointed as their chairman the provost or chief magistrate of Dumbarton. It was intended, at first, that the capital of the company should be £50,000, to be raised in transferable shares of £1 each, which were to be paid in very moderate instalments. We are not aware if the whole of the very moderate amount of capital has yet been subscribed, but the directors of the company considered the response to their prospectus to be so encouraging that they soon looked out and secured a suitable place for commencing their practical operations. They took a lease of a portion of the ground and premises long occupied by the well-known St. Rollox Foundry, and early in the present year the existing works were reconstructed, the necessary machinery was introduced, and forthwith work was commenced on certain orders that had been secured.

According to the prospectus, the company is founded on the principle of dividing surplus profit between capital and labor. In the first instance, capital receives interest at the rate of 5 per cent. per annum, and labor the current rate of wages; the remaining profit is then divided, at so much per pound, equally between capital invested and wages earned. The maximum number of shares that can be held in the company by any one shareholder is 200. A number of shareholders, we understand, have "gone" in for the maximum, one of them being an English member of Parliament, and another being a candidate for parliamentary honors.

The ground occupied by the engineering works of the company in Glasgow occupies an area of 2800 square yards. Already there is an excellent assortment of machinery at work in the various shops. The following machines are either erected and at work, or are in course of being supplied: A shaping machine, by Dundas, of Queensferry; plate-bending machine (also by Dundas), which takes in plates 4 ft. 6 in. broad; a three-quarter inch punching and shearing machine; a large planing machine by Shanks, of Johnstone, 18 feet long, and capable of taking in pieces 6 ft. square; one of Cook's medium-sized patent riveting machines; one of Dundas' new radial drills, with 3 in. spindle and 7 ft. arm, and of a total weight of nearly ten tons; ten lathes, varying from 17 in. down to 6½ in. &c., and it is seriously contemplated to order a 30 inch lathe. It is estimated that the value of the plant that is already in use amounts to upward of £5000. That certainly speaks well for the energy and enterprise of the Scotish artisan engineering co-operators, and it seems to indicate excellent prospects of work to be executed.

When the present writer visited the co-operative engine works, two or three weeks ago, there were nearly 100 hands at work, and it was intended to increase the number considerably after the Glasgow Fair holidays. Boiler making had not been begun, but a boiler shed was in course of erection, and a plate heating furnace was almost ready for firing up. The boiler work waiting to be executed included two double-flued Cornish boilers, 25 feet by 6 feet; a single flued boiler of the same dimensions, and one multitubular boiler, 8 feet long by 4 feet in diameter. The engineering work proper embraced three single 18 inch cylinder engines and one pair of engines with 18 inch cylinders, and winding gear, for the Fife Coal Company, limited; a 24 inch air compressor for working a coal hewing machine, and an 8 feet winding drum, for the West of Fife Coal Company, limited; a pair of engines with 22 inch cylinders, and winding and pumping gear, for the Bent Coal Company, near Hamilton; an engine with 12 inch cylinder, three hoists, gearing, &c., for the Scottish Wholesale Co-operative Society; one pair of small coupled engines for the Addiewell Works of Young's Paraffine Light and Mineral Oil Company (with shale crushing machine and engine in prospect); together with winding and pumping machinery, repairing and re-erecting old engines in Fifeshire, Lanarkshire and Renfrewshire, making gearing, one 50 feet circular saw bench, &c. Altogether, there was about £7000 worth of work in hand, a large portion of which was, by preference, given to the company on account of its co-operative character.

The work in hand, and the excellent prospects of the company, have induced them to add a large portion of ground to that included in the original lease, and new buildings have been designed, the plans for which have been sanctioned by the Dean of Guild Court, and will forthwith be put into execution. The chief feature of the new buildings will be an engine shop 104 feet long and 51 feet wide. It will embrace a fitting shop, which will occupy the ground floor, with a hight of 20 feet, above which there will be two other shops, each 14 feet high. In the fitting shop there will be a 12 ton traveling crane.

When it was found, in the course of last spring, that the engineering business in Glasgow was on the highway to successful development, the directors of the company turned their attention to shipbuilding likewise, as many of the shareholders were practically engaged in that branch of industry. They leased a small shipbuilding yard at Troon, on the Ayrshire coast, for carrying on ship repairs, while at Irvine which is but a few miles from Troon, they purchased about six acres of ground as a yard for the building of new ships, and for doing marine engine work in connection with the Glasgow establishment. A small vessel of the value of £3500 has already been built at Irvine, and will probably be ready for launching at the end of the present month. It is intended to take advantage of the occasion of launching the first vessel built by the company to have a suitable celebration, the shareholders of the company, and the co operators of Scotland generally, being invited to "assist" at the ceremony. The keel of another vessel, which is to cost £6000, has lately been laid in the Irvine shipbuilding yard, and thus the success of the co operative shipbuilding business seems also to be assured.

There are well nigh 150 workmen employed at Irvine, and both they and the men employed in the works at Glasgow are shareholders in the company; indeed, being a shareholder is one of the conditions on which employment is given to applicants for work. As a rule, the work people engaged in this co-operative business rank above the average of skilled workmen, whether we regard their skill, their sobriety, or their regular attendance at work, and their indisposition to "skulk" while at it.

As the manager of their engine works, the company have secured an excellent servant in the person of Mr. Thomas Howie, a gentleman who has had great experience in various branches of his profession. Mr. John Hay is the manager of the shipbuilding works at Irvine. Report speaks very favorably of that gentleman, likewise.

German War Preparations.

The Berlin correspondent of the London *Times* says: Of the many innovations resolved upon by the War Office, some few deserve to be more generally known. It having been ascertained that the Mauser rifle can within a twelvemonth be given only to six *corps d'armee*, it has been determined to adapt the captured Chassepots to the Mauser cartridge, and arm the rest of the army with the French rifle until the supply of the new German weapon is more plentiful. As the needle gun was remodeled and made a much more effective arm shortly after the conclusion of the war, and when the Mauser rifle had been already adopted on principle, the new measure may be regarded as a proof of the extreme caution observed by the Berlin authorities. It is also a remarkable fact that the 12-inch iron plates have been easily smashed by the 26-centimeter gun of the Prussian pattern, and that if current anticipations are fulfilled the like smash will befall the 14 inch plates when battered by the new 30½-centimeter cannon constructed by Mr. Krupp. Experiments for the latter purpose will begin as soon as the Prussian pebble powder, the specific weight of which is now 1·62 and 1·65, has been compressed to a density of 1·74 and 1·76, a result which, from the trials already made, may be regarded as certain as soon as the requisite machinery can be got ready. Hand in hand with the manufacture of this heavy ordnance for the armament of ships and coast fortifications the manufacture of new siege guns (21 centimeters) is going on. That the field artillery are likewise about to be equipped with a new 8·7-centimeter steel gun, furnished with a double barrel at the breech, and accordingly admitting of a more powerful charge, has, I believe, been already stated in your columns. Still more to increase the efficiency of the army, it is being gradually augmented, and in course of time may, perhaps, reach the figure contemplated by the French government for its field artillery. The present state of the German artillery may, I believe, be given as that of 170 heavy batteries (9 centimeter guns) and 121 light batteries (8-centimeter guns). The exact time of the introduction of the new 8·7-centimeter piece it would be difficult to foretell, no less than 3000 barrels having to be completed before they can be of any practical benefit to the army. A considerable portion of the work is being done by Mr. Krupp, who has recently bought large iron mines near Bilbao, in Spain, in addition to those he possesses in Germany. The extent of Mr. Krupp's operations may be inferred from his having ordered three first-class steamers of a German shipbuilding company, for the sole purpose of transporting his Spanish ore to some Dutch or German harbor. Three more vessels of the same size are to be added to the squadron next year, and six others subsequently. It is true the new ore is not all to be turned into cannon; but Mr. Krupp, having recently begun to manufacture iron plates, and intending to vie with the most renowned English manufacturers of the article before long, sees the necessity of enlarging his works at a much more rapid rate than hitherto. Up to the present time iron plates are chiefly supplied to this country by the Gruson foundry at Magdeburg, which has provided all the material for the new cast steel fortifications put up and to be put up at the sea-side and other particularly exposed situations. The increase of the German navy between the conclusion of the war and the beginning of 1874 will consist of four or five cuirassed frigates, one cuirassed corvette, four Alabama corvettes, and two gunboats, an augmentation which will make the force twice as formidable as it was when the Emperor Napoleon held the North Sea. Beside this, the utmost activity prevails in the torpedo department, where infernal machines and infernal machine boats are being made with all despatch.

Trade Report.

Office of The Iron Age.
Wednesday Evening, Oct. 1, 1873.

The past week has been characterized chiefly by a recovery of confidence in financial and business circles, and a general recovery after the panic reported very fully in our last issue. No new failures of importance were reported on Thursday and Friday, and on Saturday it became evident that the excitement was diminishing. That there was no occasion for a panic at all is now evident, but in matters of this kind the community are very apt to take counsel of their fears, and to postpone reflection until it is too late to undo the mischief accomplished. The opinion seemed to prevail that the panic must extend to the various departments of commerce, as the closing of the Exchange and the partial or complete suspension of the banks, had made a dead-lock which threatened to react seriously upon the business of the Produce and Cotton Exchanges, but it is now evident that our commercial system rests upon a sounder and more substantial foundation than was generally supposed, and that our merchants have been conducting business much more safely and prudently than in the years preceding the memorable panic of 1857. This is a hopeful sign, and the events of the week have answered in the most satisfactory manner possible the dismal forebodings of those gloomy prophets of evil who have been predicting a commercial crisis ever since the close of the war. Were there any danger of such a crisis in the immediate future, the events of the past week would have precipitated it. As it is, we may rely with confidence upon the soundness and conservatism of our commercial policy, since it has stood a severe and long-protracted test without even developing a weak part—and now that confidence is re-established, all danger of a commercial panic may be said to be past.

During the week the money market has been somewhat easier than last reported, but stock operators borrowing money on call have paid rates varying from ⅛ to ½, according to circumstances. Commercial paper has no quotable value. The opinion prevails that, as soon as the hoarded greenbacks are released and returned to the market, money ought to rule much lower than before the panic, owing to the very considerable expansion of currency and its equivalent. It is also believed that Congress will be compelled to pass a free banking act early in the coming session, to satisfy the public demand for an increase of currency. This should have been done at least three years ago.

The gold market has been much disturbed during the week, especially on Friday, when it was feared that a fresh impetus would be given to the panic. Certain operators began selling gold "to arrive," *i. e.*, making sales against specie shipments made, or to be made, from London to this market. This greatly increased the "short" interest in the market, and on Friday morning many gold loans were alled, in consequence of which the rate for the use of cash coin advanced to ½ @ 1 per cent. Two heavy "short" dealers being either unable or unwilling to borrow the coin needed to make the settlement at the Gold Exchange Bank, threatened to defeat the clearing, but as one of the large banking houses offered to lend the coin, the clearing was made, and the crisis in the gold market safely passed. The following shows the range of daily quotations in the Gold Exchange:

	Highest.	Lowest.
Thursday	111⅞	111⅛
Friday	114⅜	111⅛
Saturday	115⅝	113¼
Monday	113¼	111¾
Tuesday	112⅛	111⅜
Wednesday	111⅜	110⅝

The re-opening of the Stock Exchange on Tuesday was attended with but little excitement, but although sales "under the rule" have been postponed until Friday, it is probable that all important contracts will have been adjusted before that time. Any change in the Stock Market must be a change for the better, and although outside operators are manifesting but little disposition to invest in shares, they will probably take advantage of the opportunity now offered to buy upon a rising market, many shares being purchasable a good deal below their intrinsic value. We give below the highest and lowest of to-day's quotations on 'Change.

The following will show the movements in foreign trade for the week:

IMPORTS.

	1871.	1872.	1873.
Tot. for week	$6,884,432	$8,387,021	$10,902,468
Prev. reported	286,427,998	326,192,152	297,309,208
Since Jan 1	$293,312,430	$334,579,173	$308,211,676

Included in the imports of general merchandise for the week are:

	Quant.	Value.
Anvils	195	$2,411
Brass goods	18	2,899
Bronzes	53	9,415
Chains and anchors	194	8,301
Copper		7,419
Cutlery	267	93,190
Guns	381	28,861
Hardware	384	22,892
Iron, pig, tons	2,243	80,530
Iron, sheet, tons	253	47,135
R. R. bars	9,490	168,270
Iron cotton ties	9,626	20,961
Iron, tubes	1,177	3,125
Iron, other, tons	527	38,566
Lead, pigs	3,495	21,329
Metal goods	462	27,279
Nails	11	665
Needles	18	13,824
Old metal		11,395
Plated ware	1	53
Per. caps	6	1,2?0
Saddlery	6	1,697
Steel	3,928	47,528
Silverware	9	2,830
Tin, boxes	32,045	291,544
Tin, 412/ slabs	lbs. 239,212	63,139
Wire	1,402	14,481

EXPORTS, EXCLUSIVE OF SPECIE.

	1871.	1872.	1873.
For the week	$5,232,676	$4,860,213	$6,494,941
Prev. reported	167,456,977	161,786,682	208,673,287
Since Jan 1	$172,689,653	$166,646,895	$215,168,228

EXPORTS OF SPECIE.

Total for the week	$461,125
Previously reported	40,926,209
Total since January 1, 1873	$41,387,331

The following were the highest and lowest prices of stocks to-day:

	Highest.	Lowest.
N. Y. Cen. & Hudson Consolidated	91⅛	90
Lake Shore	75⅛	71½
Rock Island	91	88
Del., Lack. and West	88⅛	88
Wabash	45	43⅛
Harlem	112⅛	111
Western Union Telegraph	67⅞	63
Northwestern	44¾	42
Northwestern preferred	66¼	65
Milwaukee and St. Paul	35	32⅝
Milwaukee and St. Paul pref	57	56
Panama	96⅛	95
Pacific Mail	33¼	31½
Erie	51⅝	51
Ohio & Mississippi	29⅛	27¾
Boston, Hartford & Erie	2	1⅞
Union Pacific	20	18¾
C. C. & Ind. Central	22⅞	22⅛
Atlantic & Pacific Preferred	16	15⅛
Hannibal and St. Joseph	24	23½
United States Express	55⅛	55

GENERAL HARDWARE.

Since our last, the principal interest in commercial circles has centered in financial matters. We are glad to say that now the outlook is decidedly encouraging. Orders from the large trade have fallen off very much, but the small trade are buying pretty well; indeed, a good many houses report a very fair trade. Those whose dealings are with large customers say their business has fallen off almost entirely. The complaint of small remittances is universal. This is natural in the disorganized condition of exchange, but this difficulty is being rapidly overcome, and the trade should remember that if they pay well now, it will be appreciated and remembered. We have very strong hopes that the fall business will recover from the shock of this panic, and a fair trade be done, although it will certainly fall behind the very flattering promise of a few weeks ago. The country is really prosperous, crops are good, and stocks of Hardware all over the country are low. The commercial classes are not only solvent, but in good shape, and we see no reason why the goods the country needs should not be sold. All that is needed is confidence, and that is rapidly becoming established. Prices are already reduced to a low figure, and we see little prospect of any great decline this year. Manufacturers are determined not to make more goods than are needed, and already we have a large curtailment of production for the present, partly on account of the difficulty of getting currency to pay wages, and partly to keep on the safe side in case of a dull season. We may say that this action was taken last week, when affairs looked much more threatening than they do now. The Russell & Erwin Manufacturing Co. are running on half time; P. & F. Corbin have discharged a number of men; Sargent & Co., Mallory, Wheeler & Co. and O. B. North & Co. have suspended manufacturing for this week. The Hart Manufacturing Co. are running as usual.

There have been very few changes in prices this week. The most important is the new list on Ames' Shovels and Spades, which we print below in full. This list is dated October 1st, and is by far the best list of these goods ever given to the trade. The original (of which very few copies have yet been issued) is a neat pamphlet, containing a number of illustrations of different kinds of Spades and Shovels. They also illustrate Shaw's Combined Shovel Handle and Tamping Bar, for the use of railroad men, and Sisson's Patent Garden and Gravel Rakes, of which latter they say:

"The attention of the trade is invited to this new Rake, which is believed to be the best, cheapest and most durable cast steel Rake in the market. Though made of the best cast steel, we are enabled, by the use of novel and ingenious machinery, to furnish them at low prices. These Rakes were sent out in small quantities last season, and have given great satisfaction wherever they have been used. We are now prepared to furnish them in any desired quantity, and shall be pleased to receive orders for them."

The discount on the whole list is now 10 per cent., with the same quantity discount as heretofore. This makes a very slight decline on the best goods, but more on the cheap goods, the average reduction on an assortment being about 2½ per cent.

Oliver Ames & Sons' Price List.

O. AMES.

Cast Steel Edge Plated Shovels.

No.	BLACK.	Per dozen.
20.	D. Handle Plain Back Sq. p't, No. 0	$14 00
21.	" " " 1	14 50
22.	" " " 2	15 00
23.	" " " 3	15 50
24.	" " " 4	16 50
25.	" " " 5	17 75
26.	" " " 6	18 75
27.	" " " 7	21 00
28.	" " " 8	22 50
29.	" " " 9	24 00
30.	" " " 10	26 00
31.	" " " 11	28 00
32.	" " " 12	30 00
33.	" " " 13	32 00
34.	" " " 14	34 50
35.	" " " Charcoal	36 50
36.	" " " Boys'	10 50
37.	" " " Brick	15 00
38.	" " Round point, No. 1	15 00
39.	" " " 2	15 50
40.	" " " 3	16 00
41.	" " " 4	17 00
42.	" " " 5	18 25
43.	" " " 6	19 25
44.	" " " 7	21 00
45.	Long Handle " Square point, 0	14 00
46.	" " " 1	14 50
47.	" " " 2	15 00
48.	" " " 3	15 50
49.	" " " 4	16 50
50.	" " " 5	17 75
51.	" " Round point, 0	14 00
52.	" " " 1	14 50
53.	" " " 2	15 00
54.	" " " 3	15 50
55.	" " " 4	16 50
56.	D. Handle Back Strap Sq. point, 0	14 50
57.	" " " 1	15 00
58.	" " " 2	15 50
59.	" " " 3	16 00
60.	" " " 4	17 00
61.	" " " 5	18 00
62.	" " " 6	19 00
63.	Sock. Pl. B'ck, R'nd point, without h'dles	13 00
	POLISHED.	
64.	D. Handle, Plain Back, Sq. p'nt, No. 1	15 50
65.	" " " 2	16 00
66.	" " " 3	16 50
67.	" " Round point, 1	16 00
68.	" " " 2	16 50
69.	" " " 3	17 00
70.	Long Handle " Square point, 1	15 50
71.	" " " 2	16 00
72.	" " " 3	16 50
73.	" " Round point, 1	15 50
74.	" " " 2	16 00
75.	" " " 3	16 50

O. AMES.

Cast Steel Edge Plated Spades.

No.	BLACK.	Per dozen.
76.	D. Handle Plain Back No. 1	$16 00
77.	" " 2	16 50
78.	" " 3	16 75
79.	" " 4	17 50
80.	Long Handle " 1	16 00
81.	" " 2	16 50
82.	" " 3	16 75
83.	D. Handle, " Taper'd, 2	17 00
84.	" " Grafting 2	17 00
85.	" " " 3	17 50
86.	" " " 4	18 50
87.	" " Nursery 2	19 00
88.	" " " 3	19 50
89.	" " " Tap'd, No. 3	20 00
90.	" " Drain, No. 1	18 00
91.	" " " 2	18 00
92.	" " " 3	18 00
93.	" " " 4	18 00
94.	" " Ditching	18 00
95.	T. Handle, " "	19 00
96.	D. Handle, " Brick	16 00
97.	" " Subsoil	19 00
98.	" " Mining	15 00
99.	" " Peat	25 00
100.	" " Concave or Post	16 00
101.	" " Boys'	12 00
102.	" " Round point	17 00
103.	Socket Plain Back, without handles	14 00
	Polished Spades, $1 more per dozen.	
	POLISHED.	
104.	D. Handle Plain Back, No. 1	17 00
105.	" " 2	17 50
106.	" " 3	17 75
107.	" " Hedge, 2	18 50
108.	" " Round point, No. 2	18 00
109.	Long H'dle, " Spades, No. 1	17 00
110.	" " " 2	17 50
111.	" " " 3	17 75

T. M. PORTER.

Steel Edge Plated Shovels.

No.	BLACK.	Per dozen.
112.	D. Handle Plain Back Sq. p'nt, No. 1	$11 00
113.	" " " 2	11 25
114.	" " " 3	11 75
115.	" " " 4	13 00
116.	" " " 5	14 25
117.	" " " 6	15 50
118.	" " " 7	17 00
119.	" " " 8	18 50
120.	" " " 9	20 00
121.	" " " 10	21 50
122.	" " " 11	23 00
123.	" " " 12	25 00
124.	" " " 13	27 00
125.	" " " 14	29 00
126.	" " " Boys'	9 25
127.	" " Round point, 1	11 25
128.	" " " 2	11 75
129.	" " " 3	12 50
130.	" " " 4	13 50
131.	" " " 5	14 50
132.	" " " 6	15 75
133.	" " " 7	17 00
134.	Long Handle, " Square point, 1	11 00
135.	" " " 2	11 25
136.	" " " 3	11 75
137.	" " " 4	13 00
138.	" " " 5	14 25
139.	" " Round point, 1	11 00
140.	" " " 2	11 25
141.	" " " 3	11 75
142.	D. Handle Back Strap Sq. point, 1	11 25
143.	" " " 2	11 75
144.	" " " 3	12 50
145.	" " " 4	13 50
146.	" " " 5	14 50
147.	" " " 6	15 50
148.	" " " 7	17 00
	POLISHED.	
149.	D. Handle Plain Back Sq. point, 1	12 00
150.	" " " 2	12 25
151.	" " " 3	12 75
152.	" " Round point, 1	12 25
153.	" " " 2	12 75
154.	" " " 3	13 25
155.	Long Handle, " Square point, 1	12 00
156.	" " " 2	12 25
157.	" " " 3	12 75
158.	" " Round point, 1	12 00
159.	" " " 2	12 25
160.	" " " 3	12 75

T. M. PORTER.

Steel Edge Plated Spades.

No.	BLACK.	Per dozen.
161.	D. Handle Plain Back, No. 1	$12 00
162.	" " 2	12 25
163.	" " 3	12 50
164.	" " 4	13 50
165.	Long Handle, " 1	12 00
166.	" " 2	12 25
167.	" " 3	12 50
168.	" " 4	13 50
169.	D. Han. Plain Back, Grafting, 1	13 50
170.	" " " 2	14 00
171.	" " " 3	14 50
172.	" " " 4	15 00
173.	" " Concave or Post	12 50
174.	" " Diamond pointed	13 50
175.	" " Nursery, No. 2	15 00
176.	" " " 3	15 50
177.	" " Drain, 1	14 50
178.	" " " 2	14 50
179.	" " " 3	14 50
180.	" " " 4	14 50
181.	" " Ditching,	14 50
182.	T Handle, " "	15 50
183.	D. Handle, " Hedge,	14 50
184.	" " Boy's,	10 50
	Polished, $1·00 more per dozen.	
	POLISHED.	
185.	D. Handle Plain Back, No. 1	13 00
186.	" " 2	13 50
187.	" " 3	13 75
188.	" " 4	14 50
189.	Long Handle, " 1	13 00
190.	" " 2	13 50
191.	" " 3	13 75
192.	D. Handle " Hedge, 2	15 50
193.	" " Nursery, 2	16 00
194.	" " Diamond pointed	14 50

JAMES ADAMS.

Steel Edge Plated Shovels.

Adams' Goods are Imperfect.

No.	BLACK.	Per dozen.
195.	D. Handle Plain Back Sq. point, No. 2	$9 75
196.	" " " 3	10 00
197.	" " " 4	11 50
198.	" " " 5	12 50
199.	" " " 6	13 00
200.	" " " 7	14 00
201.	" " " 8	14 50
202.	" " " 9	15 00
203.	" " " 10	15 50
204.	" " " 11	16 00
205.	" " " 12	16 50
206.	" " " 13	17 00
207.	" " " 14	18 00
208.	" " Round point	9 75
209.	Long Handle " Square point 2	9 75
210.	" " " 3	10 00
211.	" " " 4	11 50
212.	" " Round point 2	9 75
	POLISHED.	
213.	D. Handle Plain Back Sq. point, No. 2	$10 75
214.	" " " 3	11 00
215.	" " Round point 2	10 75
216.	Long Handle " Square point 2	10 75
217.	" " " 3	11 00
218.	" " Round point 2	10 75

JAMES ADAMS.

Steel Edge Plated Spades.

No.	BLACK.	Per dozen.
219.	D. Handle Plain Back, No. 2	$10 75
220.	" " 3	11 25
221.	Long Handle " 2	10 75
222.	" " 3	11 25
223.	D. Handle " Nurs'y 2	13 00
	POLISHED.	
224.	D. Handle Plain Back, No. 2	11 75
225.	" " 3	12 25
226.	Long Handle " 2	11 75
227.	" " 3	12 25

O. AMES.

Patent Plain Back Solid Cast Steel Shovels & Spades.

No.	SHOVELS.	Per dozen.
228.	D. Handle Sq're point, Polished, No. 2	$18 00
229.	" " " 3	19 00
230.	" Round point " 2	19 00
231.	" " " 3	20 00
232.	Long Handle Sqr'e point " 2	18 00
233.	" " " 3	19 00
234.	" Round point " 2	18 00
235.	" " " 3	19 00
236.	D. Handle Sqr'e point, Black 2	16 00
237.	" " 3	17 00
238.	" Round point 2	17 00
239.	" " 3	18 00
240.	Long Handle Sqr'e point " 2	16 00
241.	" " " 3	17 00
242.	" Round point " 2	16 00
243.	" " " 3	17 00
	SPADES.	
244.	D. Handle, Polished, No. 1	18 00
245.	" " 2	18 00
246.	" " 3	19 00
247.	Long Handle " 1	18 00
248.	" " 2	18 00
249.	" " 3	19 00
250.	D. Handle Mining, Polished	16 50
251.	" Forking " 2	19 00
252.	" " " 3	20 00
253.	" Black 1	16 50
254.	" " 2	16 50
255.	" " 3	17 50
256.	Long Handle, " 1	16 50
257.	" " 2	16 50
258.	" " 3	17 50
259.	D. Handle Mining, "	15 50

TREADWELL.

Patent Plain Back Solid Cast Steel Shovels & Spades.

No.	SHOVELS.	Per dozen.
260.	D. Handle Square point, Polished, No. 2	$17 00
261.	" " " 3	18 00
262.	" Round point, " 2	18 00
263.	" " " 3	19 00
264.	Long Handle Square point, " 2	17 00
265.	" " " 3	18 00
266.	" Round point, " 2	17 00
267.	" " " 3	18 00
268.	D. Handle Square point, Black 2	15 00
269.	" " " 3	16 00
270.	" Round point, " 2	16 00
271.	" " " 3	17 00
272.	Long Handle Square point, " 2	15 00
273.	" " " 3	16 00
274.	" Round point, " 2	15 00
275.	" " " 3	16 00
	SPADES.	
276.	D. Handle, Polished, No. 1	17 00
277.	" " 2	17 00
278.	" " 3	18 00
279.	Long Handle, " 1	17 00
280.	" " 2	17 00
281.	" " 3	18 00
282.	D. Handle Mining, Polished	16 00
283.	" " Black, No. 1	15 50
284.	" " " 2	15 50
285.	" " " 3	16 50
286.	Long Handle, " 1	15 50
287.	" " 2	15 50
288.	" " 3	16 50
289.	D. Handle Forking, Polished, No. 2	18 00
290.	" " " 3	19 00

A. C. RAY.

Patent Plain Back Solid Cast Steel Shovels & Spades.

No.	SHOVELS.	Per dozen.
291.	D. Handle Square point, Polish'd, No. 2	$16 00
292.	" " " 3	16 50
293.	" Round point, " 2	16 50
294.	" " " 3	17 00
295.	Long Handle Square point, " 2	16 00
296.	" " " 3	16 50
297.	" Round point, " 2	16 00
298.	" " " 3	16 50
299.	D. Handle Square point, Black, No. 2	15 00
300.	" " " 3	15 50
301.	" Round point, " 2	15 50
302.	" " " 3	16 00
303.	Long Handle Square point, " 2	15 00
304.	" " " 3	15 50
305.	" Round point, " 2	15 00
306.	" " " 3	15 50
	SPADES.	
307.	D Handle, Polished, No. 1	16 00
308.	" " 2	16 00
309.	" " 3	16 50
310.	Long Handle, " 1	16 00
311.	" " 2	16 00
312.	" " 3	16 50
313.	D. Handle Mining, Polished	15 50

R. C. BLAIR.

Patent Plain Back Solid Cast Steel Shovels & Spades.

No.	SHOVELS.	Per dozen.
314.	D. Handle Sq. point, Polished, No. 2	$15 00
315.	" " " 3	15 50
316.	" Round point " 2	15 50
317.	" " " 3	16 00
318.	Long Handle Sq. point " 2	15 00
319.	" " " 3	15 50
320.	" Round point " 2	15 00
321.	" " " 3	15 50
	SPADES.	
322.	D. Handle, Polished, No. 1	15 00
323.	" " 2	15 00
324.	" " 3	15 50
325.	Long Handle " 1	15 00
326.	" " 2	15 00
327.	" " 3	15 50
328.	D. Handle Mining, Polished, No. 4	15 00

CARTER.

Patent Plain Back Solid Cast Steel Shovels & Spades.

No.	SHOVELS.	Per dozen.
329.	D. Handle Sq. point, Polished, No. 2	$14 00
330.	" " " 3	14 50
331.	" Round point " 2	14 50
332.	" " " 3	15 00
333.	Long Handle Sq. point " 2	14 00
334.	" " " 3	14 50
335.	" Round point " 2	14 00
336.	" " " 3	14 50
	SPADES.	
337.	D. Handle, Polished, No. 1	14 00
338.	" " 2	14 00
339.	" " 3	14 50
340.	Long Handle " 1	14 00
341.	" " 2	14 00
342.	" " 3	14 50

MOLDERS' SHOVELS.

Patent Plain Back Solid Cast Steel Molders' Shovels.

No.		Per dozen.
343.	O. Ames' D. Handle Sq. point, No. 2	$18 00
344.	Treadwell's " " 2	17 00
345.	A. C. Ray's " " 2	16 00
346.	R. C. Blair's " " 2	15 00
347.	Carter's " " 2	14 00
348.	J. Adams' D. H'dle S. p. imperfect, No. 2	11 50
	Back Strap Cast Steel Molders' Shovels.	
349.	O. Ames', No. 2	$16 00
350.	J. Bisbee's 2	14 00
351.	A. Stone's 2	13 00
352.	O. A. Day's 2	12 00
353	Sanderson's 2	11 00
354.	J. Carr's 2	10 50
355.	James Adams' imperfect, No. 2	9 50

O. AMES.

Polished Cast Steel Back Strap Shovels and Spades.

No.	SHOVELS.	Per dozen.
356.	D. Handle Square point, No. 1	$16 00
357.	" " 2	16 00
358.	" " 3	17 00
359.	" " 4	18 00
360.	" " 5	19 00
361.	" " 6	20 00
362.	" " 7	21 00
363.	" " 8	22 00
364.	" " 9	23 00
365.	" Round point, 2	17 00
366.	" " 3	18 00
367.	" " 4	19 00
368.	Long Handle Square point, No. 1	16 00
369.	" " " 2	16 00
370.	" " " 3	17 00
371.	" " " 4	18 00
372.	" " " 5	19 00
373.	" " Round point, No. 1	16 00
374.	" " " 2	16 00
375.	" " " 3	17 00
376.	" California Round point, No. 2	15 50
377.	" Round point, Spring point, No. 2	15 50
	SPADES.	
378.	D. Handle, No. 1	16 00
379.	" 2	16 00
380.	" 3	17 00
381.	" 4	18 00
382.	" Long Strap, No. 2	17 00
383.	" " " 3	18 00
384.	" Mining,	14 00
385.	Long Handle, No. 1	16 00
386.	" " 2	16 00
387.	" " 3	17 00
388.	" " Long Strap, No. 2	17 00
389.	" " " 3	18 00

Unpolished Shovels and Spades fifty cents less per dozen.

J. BISBEE.

Polished Cast-Steel Back Strap Shovels and Spades.

No.	SHOVELS.	Per dozen.
390.	D. Handle Square point, No. 1	$14 00
391.	" " 2	14 00
392.	" " 3	14 75
393.	" " 4	15 50
394.	" " 5	16 50
395.	" " 6	17 50
396.	" " 7	18 50
397.	" Round point, 2	14 50
398.	" " 3	15 25
399	" " 4	16 00
400.	Long Handle Square point, 1	14 00
401.	" " " 2	14 00
402.	" " " 3	14 75
403.	" " " 4	15 50
404.	" " " 5	16 50
405.	" " Round point, 1	14 00
406.	" " " 2	14 00
407.	" " " 3	14 50
408.	" " Spring pt, No. 2	14 00
	SPADES.	
409.	D. Handle, No. 1	14 00
410.	" 2	14 00
411.	" 3	14 75
412.	" 4	15 50
413.	" Long strap, No. 2	15 00
414.	" " 3	15 75
415.	" Mining,	12 00
416.	Long Handle, No. 1	14 00
417.	" " 2	14 00
418.	" " 3	14 75
419.	" " 4	15 50
420.	" " Long strap, No. 2	15 00
421.	" " " 3	15 75

Unpolished Shovels and Spades fifty cents less per dozen.

A. STONE.

Polished Cast Back Strap Shovels and Spades,

No.	SHOVELS.	Per dozen.
422.	D. Handle Square point, No. 1	$13 00
423.	" " 2	13 00
424.	" " 3	13 50
425.	" " 4	14 50
426.	" " 5	15 50
427.	" " 6	16 50
428.	" " 7	17 50
429.	" " 8	18 50
430.	" " 9	19 50
431.	" Round point, No. 2	13 50
432.	" " 3	14 00
433.	" " 4	15 00
434.	Long Handle Square point, 1	13 00
435.	" " 2	13 00
436.	" " 3	13 50
437.	" " 4	14 50
438.	" " 5	15 50
439.	" Round point, 1	13 00
440.	" " 2	13 00
441.	" " 3	13 50
442.	" Round Spring point, No.2	13 00
	SPADES.	
443.	D. Handle, No. 1	13 00
444.	" 2	13 00
445.	" 3	13 50
446.	" 4	14 50
447.	" Long strap, No. 2	14 00
448.	" " 3	14 50
449.	" Mining, No. 2	11 50
450.	Long Handle, No. 1	13 00
451.	" 2	13 00
452.	" 3	13 50
453.	" 4	14 50
454.	" Long strap, No. 2	14 00
455.	" " 3	14 50

Unpolished Shovels and Spades fifty cents less per dozen.

O. A. DAY.

Polished Cast Steel Back Strap Shovels and Spades.

No.	SHOVELS.	Per dozen.
456.	D. Handle Square point, No. 1	$12 00
457.	" " 2	12 00
458.	" " 3	12 50
459.	" " 4	13 50
460.	" " 5	14 50
461.	" " 6	15 50
462.	" " 7	16 50
463.	" " 8	17 50
464.	" " 9	18 50
465.	" Round point, 2	12 50
466.	" " 3	13 00
467.	" " 4	14 00
468.	Long Handle Square point, 1	12 00
469.	" " 2	12 00
470.	" " 3	12 50
471.	" " 4	13 50
472.	" " 5	14 50
473.	" Round point, 1	12 00
474.	" " 2	12 00
475.	" " 3	12 50
476.	" Round Spring point, No. 2	12 00
	SPADES.	
477.	D. Handle, No. 1	12 00
478.	" 2	12 00
479.	" 3	12 50
480.	" 4	13 50
481.	" Long strap, No. 2	13 00
482.	" " 3	13 50
483.	" Mining,	10 50
484.	Long Handle, No. 1	12 00
485.	" 2	12 00
486.	" 3	12 50
487.	" 4	13 50
488.	" Long strap, No. 2	13 00
489.	" " 3	13 50

Unpolished Shovels and Spades fifty cents less per dozen.

SANDERSON.

Polished Cast Steel Back Strap Shovels and Spades.

No.	SHOVELS.	Per dozen.
490.	D. Handle Square point, No. 1	$11 00
491.	" " 2	11 00
492.	" " 3	11 50
493.	" " 4	12 50
494.	" " 5	13 50
495.	" " 6	14 50
496.	" " 7	15 50
497.	" Round point 2	11 50
498.	" " 3	12 00
499.	" " 4	13 00
500.	Long Handle Square point, 1	11 00
501.	" " 2	11 00
502.	" " 3	11 50
503.	" " 4	12 50
504.	" " 5	13 50
505.	" Round point 1	11 00
506.	" " 2	11 00
507.	" " 3	11 50
508.	" Round Spring-point, 2	11 00
	SPADES.	
509.	D. Handle, No. 1	11 00
510.	" 2	11 00
511.	" 3	11 50
512.	" 4	12 50
513.	" Long strap, 2	12 00
514.	" " 3	12 50
515.	" Mining,	10 00
516.	Long Handle, " 1	11 00
517.	" " 2	11 00
518.	" " 3	11 50
519.	" " 4	12 50
520.	" Long strap, 2	12 00
521.	" " 3	12 50

Unpolished Shovels and Spades fifty cents less per dozen.

JOHN CARR.

Polished Cast Steel Back Strap Shovels and Spades.

No.	SHOVELS.	Per dozen.
522.	D. Handle Square Point, No. 1	10 50
523.	" " 2	10 50
524.	" " 3	11 00
525.	" Round point, 2	11 00
526.	" " 3	11 50
527.	" " 4	12 50
528.	Long Handle Square point, 1	10 50
529.	" " 2	10 50
530.	" " 3	11 00
531.	" Round point, 1	10 50
532.	" " 2	10 50
533.	" " 3	11 00
534.	" Spring point, 2	10 50
	SPADES.	
535.	D Handle, No. 1	10 50
536.	" 2	10 50
537.	" 3	11 00
538.	" 4	12 00
539.	" Long strap, 2	11 50
540.	" " 3	12 00
541.	" Mining,	9 50
542.	Long Handle, 1	10 50
543.	" 2	10 50
544.	" 3	11 00
545.	" 4	12 00
546.	" Long strap, 2	11 50
547.	" " 3	12 00

C. H. REED.

Steel Back Strap Polished Shovels and Spades.

No.	SHOVELS.	Per dozen.
548.	Best Steel D. Handle Square point, No. 2	$10 00
549.	" " " 3	10 50
550.	" " " 4	11 50
551.	" " Round point, 2	10 50
552.	" Long Handle Sq're point, 2	10 00
553.	" " " 3	10 50
554.	" " " 4	11 50
555.	" " Round point, 2	10 00
556.	" " " 3	10 50
	SPADES.	
557	Best Steel D Handle, No. 2	10 00
558.	" 3	10 50
559.	" Long Handle, 2	10 00
560.	" " 3	10 50

LINDSAY.

No.	SHOVELS.	Per dozen.
561.	Steel D. Handle Square point, No. 2	$9 00
562.	" " " 3	9 50
563.	" " " 4	10 50
564.	" " Round point, 2	9 50
565.	" Long Handle, Square point, 2	9 00
566.	" " " 3	9 50
567.	" " " 4	10 50
568.	" " Round point, 2	9 00
	SPADES.	
569.	Steel D. Handle, No. 2	9 00
570.	" " 3	9 50
571.	" Long Handle, 2	9 00
572.	" " 3	9 50

JAMES ADAMS.

Imperfect Polished Cast Steel and Steel Shovels and Spades.

No.	SHOVELS.	Per dozen.
573.	D. Handle Square point, Patent,	$11 00
574.	" Round point, "	11 00
575.	Long Handle, " "	11 00
	SPADES.	
576.	D. Handle, Patent	11 00
577.	Long Handle, "	11 00
	SHOVELS.	
578.	D Handle Square point, Cast Steel	9 00
579.	" Round point, "	9 00
580.	Long Handle, " "	9 00
	SPADES.	
581.	D. Handle Cast Steel	9 00
	SHOVELS.	
582.	D. Handle Square point, Steel	8 50
583.	" Round point, "	8 50
584.	Long Handle, " "	8 50
	SPADES.	
585.	D. Handle, Steel	8 50

No.	TOY SHOVELS.	Per dozen.
586.	O. Ames' Polished Cast Steel	9 00
587.	J. Bisbee's " "	8 00
588.	A. Stone's " "	7 50
589.	O. A. Day's " "	7 00
590.	C. H. Reed's " Steel,	6 50
591.	Naylor's " Iron,	6 00
	TOY SPADES.	
592.	O. Ames', Polished Cast Steel	9 00
593.	J. Bisbee's " "	8 00
594.	A. Stone's " "	7 50
595.	O. A. Day's " "	7 00
596.	C. H. Reed's " Steel.	6 50
597.	Naylor's " Iron,	6 00

ESEK CARR.

Iron Back Strap Shovels and Spades.

No.	SHOVELS.	Per dozen.
598.	D. Handle Square point, Polished, No. 2	$8 00
599.	" " " 3	8 50
600.	" " " 4	9 50
601.	" " " 5	10 25
602.	" " " 6	11 00
603.	" Round point " 2	8 00
604.	" " " 3	8 50
605.	" " " 4	9 50
606.	Long Square point " 2	8 00
607.	" " " 3	8 50
608.	" " " 4	9 50
609.	" Round point " 2	8 00
610.	" " " 3	8 50
611.	D. Handle Square point, Black, 2	7 00
612.	" " " 3	7 50
613.	" " " 4	8 50
614.	" " " 5	9 25
615.	" " " 6	10 00
616.	" Round point " 2	7 00
617.	" " " 3	7 50
618.	" " " 4	8 50
619.	Long Han. Square point " 2	7 00
620.	" " " 3	7 50
621.	" " " 4	8 50
622.	" Round point " 2	7 00
623.	" " " 3	7 50
	SPADES.	
624.	D. Handle, Polished, No. 2	8 00
625.	" " 3	8 50
626.	" " 4	9 50
627.	Long Handle " 2	8 00
628.	" " 3	8 50
629.	" " 4	9 50
630.	D. Handle, Black, 2	7 00
631.	" " 3	7 50
632.	" " 4	8 50
633.	Long Handle " 2	7 00
634.	" " 3	7 50
635.	" " 4	8 50

NAYLOR.

Iron Back Strap Shovels and Spades.

No.	SHOVELS.	Per dozen.
636.	D. Handle Square point, Polished, No. 2	$7 50
637.	" " " 3	8 00
638.	" " " 4	9 00
639.	" " " 5	9 75
640.	" " " 6	10 50
641.	" Round point " 2	7 50
642.	" " " 3	8 00
643.	" " " 4	9 00
644.	Long H'dle Square point " 2	7 50
645.	" " " 3	8 00
646.	" " " 4	9 00
647.	" Round point " 2	7 50
648.	" " " 3	8 00
649.	D. Handle, Square point, Black, 2	6 50
650.	" " " 3	7 00
651.	" " " 4	8 00
652.	" " " 5	8 75
653.	" " " 6	9 50
654.	" Round point " 2	6 50
655.	" " " 3	7 00
656.	" " " 4	8 00
657.	Long Square point, Polished, 2	6 50
658.	" " " 3	7 00
659.	" " " 4	8 00
660.	Long Round point " 2	6 50
661.	" " " 3	7 00
	SPADES.	
662.	D. Handle, Polished, No. 2	7 50
663.	" " 3	8 00
664.	" " 4	9 00
665.	" " Round point, No. 2	8 00
666.	Long Handle " No. 2	7 50
667.	" " 3	8 00
668.	" " 4	9 00
669.	D. Handle, Black, 2	6 50
670.	" " 3	7 00
671.	" " 4	8 00
672.	Long Handle " 2	6 50
673.	" " 3	7 00
674.	" " 4	8 00
675.	D. Handle Grafting, Black, No. 2	8 50
676.	" " " 3	9 00

J. DORR.

Iron Back Strap Shovels and Spades.

No.	SHOVELS.	Per dozen.
677.	D. Handle Square point, Polished, No. 2	$7 00
678.	" " " 3	7 50
679.	" " " 4	8 50
680.	" Round point " 2	7 00
681.	" " " 3	7 50
682.	Long H'dle Square point " 2	7 00
683.	" Round point " 2	7 00
684.	D. Handle Square point, Black 2	6 00
685.	" " " 3	6 50
686.	" " " 4	7 50
687.	" Round point " 2	6 00
688.	" " " 3	6 50
689.	Long H'dle Square point " 2	6 00
690.	" " " 3	6 50
691.	" " " 4	7 50
692.	" Round point " 2	6 00
693.	" " " 3	6 50
	SPADES.	
694.	D. Handle, Polished, No. 2	$ 7 00
695.	" " 3	7 50
696.	" " 4	8 50
697.	Long Handle " 2	7 00
698.	" " 3	7 50
699.	D. Handle, Black 2	6 00
700.	" " 3	6 50
701.	Long Handle " 2	6 00
702.	" " 3	6 50

SCOOPS.

No.		Per dozen.
703.	O. Ames' Cast Steel, Polished, No. 2	$18 00
704.	" " " 3	18 75
705.	" " " 4	19 50
706.	" " " 5	20 25
707.	" " " 6	21 00
708.	" " " 7	22 50
709.	" " " 8	23 00
710.	" " " 9	24 00
711.	" " " 10	25 00
712.	" " " 11	26 00
713.	" " " 12	27 00
714.	" " " 13	28 50
715.	" " " 14	30 00
716.	J. Bisbee's " " 2	17 00
717.	" " " 3	17 75
718.	" " " 4	18 50
719.	" " " 5	19 25
720.	J. Bisbee's Cast Steel, Polished, No. 6	21 00
721.	" " " 7	21 00
722.	" " " 8	22 00
723.	O. A. Day's " " 2	16 00
724.	" " " 3	16 50
725.	" " " 4	17 00
726.	" " " 5	17 50
727.	" " " 6	18 25
728.	" " " 7	19 25
729.	" " " 8	20 25
730.	Sanderson's Best Steel " 2	14 00
731.	" " " 3	14 50
732.	" " " 4	15 00
733.	" " " 5	15 50
734.	" " " 6	16 25
735.	" " " 7	17 00
736.	" " " 8	18 00
737.	" " " 9	19 00
738.	" " " 10	20 00
739.	" " " 11	21 00
740.	" " " 12	22 00
741.	Naylor's Steel Half, Polished 2	12 50
742.	" " " 3	13 00
743.	" " " 4	13 50
744.	" " " 5	14 00
745.	" " " 6	14 75
746.	" " " 7	15 50
747.	" " " 8	16 50
748.	" " " 9	17 50
749.	" " " 10	18 75
750.	C. H. Reed's Steel Pol'd Trimmers, No. 1	12 00
751.	" " " " 2	12 00
752.	" " " " 3	12 50
753.	J. Carr's Extra Iron Polished, No. 2	11 00
754.	" " " 3	11 50
755.	" " " 4	12 00
756.	" " " 5	12 50
757.	" " " 6	13 00
758.	" " " 7	13 75
759.	" " " 8	14 50
760.	" " " 9	15 50
761.	" " " 10	16 50
762.	Sanderson's Ex. Iron Half Polished, No. 2	10 50
763.	" " " 3	11 00
764.	" " " 4	11 50
765.	" " " 5	12 00
766.	" " " 6	12 50
767.	" " " 7	13 25
768.	" " " 8	14 00
769.	" " " 9	15 00
770.	" " " 10	16 00
771.	" " Black, 2	10 00
772.	" " " 3	10 50
773.	" " " 4	11 00
774.	" " " 5	11 50
775.	" " " 6	12 00
776.	" " " 7	12 75
777.	" " " 8	13 50
778.	" " " 9	14 50
779.	" " " 10	15 50
780.	J. Dorr's Iron Black, No. 2	9 50
781.	" " 3	10 00
782.	" " 4	10 50
783.	" " 5	11 00
784.	" " 6	11 50
785.	" " 7	12 25
786.	" " 8	13 00
787.	Lockwood's Iron Black 2	9 00
788.	" " 3	9 50
789.	" " 4	10 00
790.	" " 5	10 50
791.	" " 6	11 00

FURNACE SCOOPS.

No.			Per dozen.
	Sanderson.	Polished Steel	
792.	"	D. Handle	$10 50
793.	"	Long Handle	10 50
	Naylor.	Half Polished Steel.	
794.	"	D. Handle	10 00
795.	"	Long Handle	10 00
	John Carr.	Extra Iron, Polished.	
796.	"	D. Handle	9 50
797.	"	Long Handle	9 50
	Sanderson.	Extra Iron.	
798.	"	D. Handle, Half Polished	9 00
799.	"	Long Handle "	9 00
800.	"	D. Handle, Black	8 75
801.	"	Long Handle "	8 75
	J. Dorr.	Black Iron.	
802.	"	D. Handle	8 25
803.	"	Long Handle	8 25
	Lockwood.	Black Iron.	
804.	"	D. Handle	8 00
805.	"	Long Handle	8 00

BOYS' SCOOPS.

No.			Per dozen.
806.	O. A. Day.	Cast-Steel, Polished	$11 50
807.	Sanderson.	Steel, Polished	10 50
808.	Naylor.	" Half Polished	10 00
809.	John Carr.	Extra Iron, "	9 50
810.	Sanderson.	" Half "	9 00
811.	"	" Black	8 75
812.	J. Dorr.	"	8 25

WESTERN PATTERN COAL SHOVELS.

No.			Per dozen.
813.	Sanderson's Best Steel H'lf Pol'ed,	No. 2	$12 00
814.	" "	3	13 00
815.	" Black	2	11 50
816.	" "	3	12 50

O. AMES.

Drainage and Ditching Tools, &c.

No.		Per dozen.
90.	D. Handle Plain Back Drain Spades, 1	18 00
91.	" " 2	18 00
92.	" " 3	18 00
93.	" " 4	18 00
94.	" Ditching Spades,	19 00
95.	T. Handle, "	19 00
817.	Cast Steel Concave Drain Cleaners to push,	15 00
818.	" Flat, "	15 00
819.	" Concave Socket, "	18 00
820.	" " pull,	18 00
821.	" Square, " push,	18 00
822.	" " pull,	18 00
100.	Steel Edge Post Hole Spades,	16 00
823.	Cast Steel Spoons for digging post holes,	14 50
823½.	Drain Tile Layers,	12 00

Lime Shovels.

824.	Cast Steel Back Strap Long Handled, Double Strap, Black, No. 5	$19 50

Gas Shovels.

825.	Cast Steel Back Strap Long Handle Long Strap, Black, No. 2	$19 00

SHAW'S

Combined Shovel Handle and Tamping Bar.

834.	Patented Jan. 25, 1870	$18 00

COFFEE SHOVELS.

Cast Steel Back Strap.

No.		Per dozen.
826.	O. Ames's D. Handle Coffee, No. 2	$
827.	" " " 3	
828.	" T. " 2	
829.	" " " 3	
830.	O. A. Day's D " 2	
831.	" " " 3	
832.	" T. " 2	
833.	" " " 3	

BENHAM'S.

Picket or Hunter's Shovel.

No.		Per dozen.
835.	O. Ames' Patent Picket or Hunter's	$11 50

Double Strap Shovels or Scoops, $1 more per dozen. Unpolished Cast Steel, or Steel Scoops, 75 cents less per dozen than polished.

Any variety of Shovels, Spades or Scoops not on the list made to order. Unpolished Cast Steel Shovels, 50 cents less per dozen than list.

	Per dozen.
D. Shovel, Spade or Scoop Handles, bent and riveted	$2 50
Long Shovel, Spade or Scoop Handles, bent	2 00

Long or D Handles, of extra lengths, 75 cents more per dozen.

Handles of extra quality, 25 cents more per dozen.

SISSON'S

Patent Garden and Gravel Rakes.

	Garden.	Gravel.
8 teeth Cast Steel, per dozen	$9 00	$9 00
9 " " "	9 25	9 25
10 " " "	9 50	9 50
11 " " "	9 75	9 75
12 " " "	10 00	10 00
13 " " "	10 25	10 25
14 " " "	10 50	10 50
15 " " "		10 75
16 " " "		11 00

Less 33⅓ per cent. discount.

There is a marked improvement in the demand for foreign Hardware this week over last, and prices are fully sustained. Genuine Barlow Knives are in good demand, and stocks almost exhausted. The firm tone of the market for Coil Chain and Traces, which we have noticed for several weeks past, continues, and some holders are asking 9 cents, gold, for ⅝ Coil Chain, but we have not heard of any sales being effected at any higher figures than the basis of 8¾ cents for ⅝. Other goods are without change. The manufacturers of Iron Wire met to-day and decided on a slight increase in the discounts from their list for Bright, Annealed and Coppered Wire. The following are the revised discounts: Bright and Annealed Wire, Nos. 0 @ 18, discount 30 @ 35; Nos. 19 @ 26, discount 40 @ 45; Nos. 27 @ 36, discount 45 @ 50; Annealed, Fence and Grape Wire, Nos. 8 to 14, discount 30 @ 35 per cent. Fence Staples were also reduced half a cent. per lb., and are now quoted at 9 @ 9½ cents per lb. Galvanized, Tinned and Cast Steel Wire remain as before.

Trade in Stamped and Japanned Tin Ware has fallen off considerably, owing in great measure to the recent financial disturbance. Plain Stamped Ware is generally quoted at discount 15 @ 20 per cent. from list, but the last-named figure could be shaded without difficulty for a fair order. The demand for Retinned goods continues fair, being stimulated by the action of manufacturers since the break in the combination. The regular discount for leading goods of this class is 20 @ 25 per cent., but actual buyers can place orders at much better figures.

Copper Bottoms are quoted 40 cents per lb., discount 5 per cent. in small lots. Brass Kettles have declined 5 cents per lb., and are now offered at 50 cents, and in lots of 500 lbs., 45 cents per pound, net. There is no change to note in the price of Horse Shoes. We quote Sandusky Tool Co.'s first quality Planes discount 20 per cent., and Ogontz, discount 20 and 10 per cent. Ohio Tool Co.'s first quality Planes, discount 20 per cent., and Sciota, discount 20 and 10 per cent. The Russell & Erwin Mfg. Co. quote Owasco Tool Co.'s first quality Planes, discount 25 per cent., and, second quality discount 25 and 10 per cent.

There is little that is new to report regarding the condition of the Nail market. Demand is fair, and the review of the trade for the month of September entirely satisfactory to manufacturers, as far as the quantity sold is concerned. The stocks of Nails in this city and at the mills is lighter than it has been, at this season, in many years. We quote Nails at $4·50, net, for 10d. in small or large lots.

The manufacturers of Cordage advanced the price of Manila and Sisal Rope, etc., on the 24th ultimo. We publish below William Wall's Sons revised list, which is half a cent. per lb. advance on former quotations:

Manilla Cordage, sizes above 12 th'd	18 cts.
" 6 th'd and 9 th'd (¼ in. and 5-16 in diam	19 "
Manila Cordage, 12 th'd (⅜ in diam.)	18½ "
" Hay Rope	18½ "
" Cordage, bolt rope yarns	20 "
Manilla Cordage, bolt rope yarns, 6 th'd and 9 th'd	21 "
Tar'd Manila	17½ "
Fine Tar'd Manila Lath Yarn	19 "
Sisal Rope, sizes above 12 th'd	16 "
" 6 th'd and 9 th'd	17 "
" 12 th'd and Hay Rope	16½ "
New Zealand Cordage, sizes above 12 th'd	15½ "
New Zealand Cordage, 6 th'd and 9 th'd (¼ and 5-16 in	16½ "
New Zealand Cordage, 12 th'd (⅜ in.) and Hay Rope	16 "

The American Spiral Spring Butt Co. have established the following prices for their Spring Butts, to take effect October 1, which is an important reduction on leading sizes:

PLAIN JAPANNED.

No. 22	$5 00
" 26	6 50
" 50	4 50
" 52	6 50
" 54	9 50
" 56	12 50
" 60	16 00

The regular discount from the above list is 25 per cent.

The attention of the trade is directed to the following circular, issued by the Nicholson File Company, of Providence, R. I., under date of 25th ultimo.

"It has just come to our knowledge that certain parties in the West are engaged in buying up worn out old files of our manufacture, and, after immersing them in an acid bath, selling the same in packages which have a label of the same color and general appearance as ours, and falsely stating as follows: 'Nicholson's Files, Providence, R. I., Increment cut, made from best English steel.'

"Our friends and the public are cautioned against this deception, which we consider one of a most injurious character, not only to dealers and consumers who desire the 'Nicholson' files as we produce them, but also to ourselves, whose hard-earned reputation is liable to vanish in spite of our most earnest efforts, if this fraud is long continued, as the files so treated are comparatively valueless for use.

"We have taken steps to have the parties who are thus engaged in deceiving the public, and trading upon our reputation, presented to the courts for treatment, and will thank our friends having any information bearing upon this subject, to notify us promptly of the parties who have sold, or are offering for sale, 'Nicholson' files doctored as above described."

IRON.

American Pig.—A number of small works and large consumers of American iron have either partially suspended or have totally stopped operations, while many others are making preparations to curtail their production, and this, together with the more direct effect of the financial troubles, lessens the demand for Pig Iron. The production, however, is still going on, and stocks are accumulating, more especially of No. 2 and Forge brands, both of which are in large supply. With this condition of affairs there have been no sales of any amount, and prices, though nominally quoted about the same, are unsettled and decidedly in favor of purchasers. It is altogether probable that a cash offer at a material decline from our quoted rates would be quickly taken. We quote nominally No. 1 at $42; No. 2, $33 @ $36; and Gray Forge, $30c @ $32, though no considerable lots could be placed at these figures. We only notice sales of 200 tons, No. 2 Ex. at $35.

Scotch Pig.—The demand for Scotch Iron has been very light the past week, but with only a small supply here holders show no disposition to realize except for actual cash at time of offering. Sales include about 100 tons Coltness, 100 tons Summerlee, and small lots Glengarnock, all on private terms. We quote, nominally, Coltness at $51; Gartsherrie, $49 @ $50; Summerlee, $48; Glengarnock, $47, and Eglinton at $45.

Following are the prices of Scotch Pig Iron in Glasgow, as reported by Messrs. J. E. SWAN & BROS., under date of Sept. 19:

	No. 1	No. 3	No. 4
Gartsherrie	130/	125/	....
Coltness	130/	118/	....
Summerlee	122/6	116/	118/
Langloan	125/	116/	....
Govan	118/	115/	115/
Calder	*126/6	116/	....
Shotts, Bessemer	160/	155/	....
do Ordinary	125/	117/6	....
Carnbroe	122/6	117/	117/6
Wishaw	117/	114/	114/
Monkland	120/	114/	....
Chapelhall	125/	....	....
Clyde	118/6	115/	115/
Quarter—Clyde	118/6	115/	115/

Glasgow Warrants 3-5, No. 1; 2-5, No. 3, g. m. b. 114/9.

*f. o. b. Glasgow, 1/ per ton, extra.

WEST COAST BRANDS—*f. o. b. Ardrossan.*

Glengarnock, Ardeer, Eglinton, Lugar, Muirkirk, Portland,	Branded Eglinton	122/6	117/
		118/6	116/6
Dalmellington		118/	116/

	117/6
	111/

CURRENT RATES OF FREIGHT ON PIG IRON.

To	From Glasgow.	From Ardrossan.
New York	7/6	7/6
Boston	17/	17/
New Orleans	20/	20/
Baltimore	17/	17/6
Philadelphia	16/	16/
Providence	20/	15/

Bar.—There is very little doing in Manufactured Iron, though prices are in general nominally steady.

Rails and Scrap.—The market is entirely nominal for all description of Rails and Scrap. In absence of transactions holders generally, in the present position of affairs, refuse to name quotations.

We are indebted to Messrs. S. W. HOPKINS & Co., New York and London, for the following statement of the exports of railway iron from Great Britain for the month ending August 31, 1873, and eight months ending at same time, compiled from official sources:

To	M'th. ending Aug. 31.			8 Mos. ending Aug. 31.		
	1871.	1872.	1873.	1871.	1872.	1873.
United States.....tons.	47,963	40,005	6,967	335,162	340,321	141,329
British America "	10,976	13,478	6,294	48,114	50,050	42,399
Spanish West India Islands "	200	83	854	1,478	1,089	3,572
Brazil "	2,155	594	1,021	14,496	18,434	3,395
Chili "	690	515	175	7,903	2,580	3,150
Peru "	1,682	2,496	1,519	16,349	24,700	7,047
Russia "	11,095	21,468	27,310	65,634	48,491	96,314
Sweden "	1,258	472	4,707	8,154	8,809	27,969
Germany "	3,630	4,965	3,975	40,622	28,525	32,782
Austrian Territories "	6,607	801		15,241	7,534	816
France "	66	52	10	1,719	307	2,215
Holland "	2,050	232	3,315	8,589	2,694	14,781
Spain and Canaries "	153	2,038	399	6,511	3,377	7,588
British India "	1,578	1,989	506	26,253	10,209	10,442
Australia "	630	1,993	2,905	11,382	14,577	13,204
Egypt "	808	250	1,604	2,439	10,443	4,694
Other countries "	6,749	3,541	13,495	49,802	46,627	83,708
Total "	98,369	94,982	73,996	662,541	627,587	499,456

METALS.

Copper.—The market for Ingot is in a very unsettled and unsatisfactory position. The stock held by manufacturers is said to be very large, and with a very limited demand for their productions, and the general unsettled condition of commercial affairs, many of them are either suspending work or making preparations to do so in the early future. The nominal asking price for cash is 25c. @ 25½c., and 27c. for future delivery, but it is very doubtful if a round parcel could be placed at anything like these figures. Sales are only making of such small lots as are urgently required for immediate use. Manufactured Copper is extremely dull, though values are unchanged. We quote at 40c. for Bolts and Braziers, 38c. for New Sheathing, 45c. for Nails, 26c. @ 27c. for Old Sheathing, 27c. for Yellow, Metal Sheathing, 32c. for Yellow Metal Bolts, and 27c. @ 30c. for Yellow Metal Nails, Sheathing, etc.

Tin.—There is scarcely any trade doing in Pig Tin, and values continue nominal. We quote Straits at 31c. @ 31¼c.; English L. & F., 28c.; ditto refined, 29½c.; and Banca 34c., all gold. Plates are also dull, and only small sales reported. Prices have been reduced about 25c., gold, but are not very strong, even at the decline. We quote: I. C. Charcoal, $10·25 @ $10·50; I. C. Coke, $8·25 @ $8·75; Charcoal Terne, $9·75 @ $10, and Coke Terne, $7·25 @ 8·25, all gold.

Lead.—There has been little, if any, trade effected the past week in either foreign or domestic Pig, though prices all held about steady. We quote at the close at 7c. for Spanish and German ordinary; 7c. for English; 7¼c. @ 7⅝c. for foreign refined, and 6¾c. @ 6¾c. for domestic, all gold. Manufactured Lead continues steady. We qnote at 9¼c. for Bar, 10½c. for Sheet and Pipe, and 16½c. for Tin Lined Pipe, less the usual discount to the trade.

Spelter and Zinc.—Trade continues very dull in Spelter of all kinds, though former prices are sustained by favorable advices from abroad. We quote Silesian at 7⅝c. @ 7¾c., gold, according to brand; and domestic plates at 8¾c. @ 11c., currency. Sheet Zinc is quiet, but steady, at 10c., less 4 per cent. gold, from agents' hands.

Antimony.—Transactions the past week in Regulus have been limited to a few jobbing lots within the former range. We quote at 13⅜c. @ 13½c., gold.

Trades' Union Outrage.—The Rutland (Vt.) *Herald* of Friday gives the following account of an attempted outrage, which, fortunately, was discovered before the murderous designs of the perpetrators had been accomplished: "On Wednesday morning last, about 2 o'clock, Mr. Walter Teffts, overseer of the Port Henry Iron Ore Company's mines, at Mineville, N. Y., was awakened by the report of guns, which were being fired directly at, and apparently in the immediate vicinity of, his house. He sprang out of his bed, followed by his wife, and, soon after, detected the smell of a burning fuse. He rushed out, and quickly discovered, a few feet from the house, a three-minute fuse still burning freely. Attached to the other end was a keg of powder, which was placed directly under his house. He was almost stunned by the discovery, but severed the connection between it and the powder, and thus averted a most terrible calamity. Previous to the awakening of Mr. Teffts, there had passed through the house seven bullets in near proximity to where he and his wife slept. No reason for this outrage can be given, except it may be from the recent troubles the miners had with the company, and the fact that an appointee of Mr. Teffts took the place of one discharged, all done, however, according to the company's order. The directors of the company were called together to take action in the matter, but we have not yet learned the result of their meeting."

The Myers' Manufacturing Co.—This company is most fertile in inventing new styles of smoothing irons and fluting machines, as well as cheap combinations of both, at rates so low as to place them within reach of the humblest purses. Five classes of goods distinguish themselves particularly as adapted to Spanish-American trade, which they furnish to the latter: 1, the Domestic fluting machine; 2, the reversible sad and polishing iron; 3, the Dollar-Varden toilet iron; 4, the improved Fashion fluter and ruffler; and, 5, the sad-iron, with stand attachment. We have the conviction that in Spanish-America and the Brazils, preference will be given to these, the most practical articles of family use of the kind we have seen for a long time. Office of the company, 209 Center street. The company desire agents for the Spanish-American countries.—*El Cronista.*

Our English Letter.

Review of the British Iron, Steel, Metal and Hardware Trades.

(*From our Regular Correspondent.*)

SHEFFIELD, Eng., September 16, 1873.

I know of no surer or more marked indication of the large profits made lately by colliery proprietors than the great amount of capital which is now being invested in that class of property throughout this country. Everywhere, and particularly in the Midland, South Wales and Severn Valley coalfields, new pits are being opened out and old ones are being refurbished up—if the expression be admissible—with as much rapidity as circumstances will admit of. The town whence I write is, as most of your readers are doubtless well aware, situate in the very center of the great Midland field, which is but second in importance to the Durham one, if, indeed, it can now yield to the latter in any respect. This field—the Midland—extends for nearly seventy miles in a straight line, from Nottingham in the southeast to Leeds in the northwest, and varies, so far as has been ascertained, in breadth, from five to twenty-three miles. It contains several good seams, beside a number of thin layers never yet deemed worth getting out. The principal one worked is the Barnsley thick coal, or Top Hard, which is known to attain nine feet in its best part, which is, so far, at the Denaby Main Colliery, near Barnsley. It rapidly thins out, however, and is only eight feet at the Oaks, decreasing to six feet in the neighborhood of Sheffield, where there are a good many geological faults or dislocations of the natural order of the superimposed strata. The next best seam is the Silkstone, which lies some three or four hundred yards lower, and varies in bulk from four feet six to three feet four inches. Near Sheffield this crops up near to the surface, but dips shortly after to the eastward, and is thence two hundred yards down, and much lower than the Parkgate bed, a four foot seam, which serves several collieres near this town. Beside these, there are the Wath Wood, Melton and five or six thin seams which are not worked, but probably may prove a *dernier resort* in our great coming coal famine. When that famines *does* arrive I shall endeavor to make a contract with some genial hearted American coal owner for a supply on good terms. So great, I may say, has the demand for this class of mineral property become, that the fortunate owners and lessors have coolly advanced prices by £300 to £400 per acre, and are likely to impose yet harder terms. As as an example of what is being done in the way of sinking, I may enumerate the following rather lengthy list:

A very extensive plant is being put down to work the measures on the estate of the Duke of St. Albans. At Watnall, active preparations are being made for sinking by Messrs. Barber, Walker & Co., of the Eastwood Collieries. On the well-known Newstead Abbey estate, the coal covering an area of 5000 acres, a shaft has been sunk, the works being the joint property of the Staveley and Sheepbridge Coal and Iron Companies, the seams including the well-known Black-shale or Silkstone. New collieries are about to be commenced at once at Hucknall under Huthwaite, whilst in the vicinity of Mansfield upward of 4000 acres of coal are only awaiting for development the short line between the former place and Worksop. In South Derbyshire, a great many new pits are being sunk, whilst several extensive collieries are projected in the Erewash Valley, to take advantage of the new line between Nottingham and Derby. Near to Chesterfield the Staveley Company, with a productive power of upward of 800,000 tons of coal a year, and with an unworked field of some thousands of acres, is about to sink two new shafts, the Silkstone coal of this company being the finest in the country. The Alton Colliery, just taken by a company, purpose extending the workings of the coal, whilst midway between Chesterfield and Sheffield several new collieries are being opened

out. Near to Sheffield the Industrial Coal and Iron Company is sinking in a new field. In South Yorkshire, the Holmes Coal Company, near Masborough, is sinking a new shaft to work a seam of coal at a moderate depth. Near to Wath, in the same direction, Messrs. Sellars & Co. are sinking to the Barnsley coal, having a field of about 1000 acres, and purpose raising 1000 tons a day. In the same district several other collieries are about to be sunk, all of which intend sending to bank, when fully at work, not less than 1000 tons daily. Near Houghton, the coal belonging to Mr. Wright, about 1300 acres, has been secured, and the site for the colliery has been selected. A vast field of coal on the estate of Mr. F. J. Foljambe, M.P., at Grimethorpe and Brierley, is under-stood to have been secured, and the coal of the Rev. S. Allott, of South Kirby, has also been taken. The Wombwell Main Company is sinking to a good seam, whilst in the same locality Messrs. Mitchell and Stewart are sinking to the Barnesley bed. At Chudworth, a number of gentlemen connected with some ironworks in North Lincolnshire have secured a large area of coal, and about a couple of miles from there, Messrs. Davy, of Sheffield, are boring a short distance from the Midland Railway, to prove the depth of the measures. In the same locality, at Carlton, bricks are being made preparatory to sinking to the thick coal on the estate of Lord Wharncliffe. In the Barnesly district, the coal is being opened out in all directions, Mr. Lodge, of the Bloomhouse Colliery, going down to the Silkstone and other seams on the estate of W. S. Stanhope, M. P., and the Silkstone Fall Company has also taken the coal on part of the same property. The Silkstone coal has not yet been reached from it; but now three different firms are going from one to the other—the Messrs. Newton, Chambers & Co., from close to the outcrop, about three miles from Barnsley; the Hoyland and Elsecar Company, from their pit at Hoyland; and the Barrow Steel and Hematite Company, on the estate of Mr. Edmunds. The penetrating to the Silkstone seam will open out a vast and valuable field of coal many miles in extent in South Yorkshire alone. Near to Doncaster, the Rosedale and Ferryhill Company has secured 1500 acres of coal. In the Wakefield district the coal on the estate of Sir L. Pilkington, Bart., Mr. Waterton (son of the late well-known naturalist), and several others are now being very extensively developed, and the same is the case with regard to the Horbury, Normanton and Leeds districts, When the works in operation and about to be opened out are completed and in full working order, it is estimated that in the Midland field alone there will be an increase in the production of from 200,000 to 220,000 tons a week. This is only a mere sample of what is being done on every side, the great iron and steel companies being foremost in the prosecution of these new borings, as indeed they ought to be. In the present state of things, which people will presently begin to regard as normal, their very existence depends upon the possession of coal and iron ore, or ironstone mines. This fact has become so potent that, as I have just observed, they are eagerly securing mineral properties on the best possible terms. Some of the newspapers here are very improperly and ill-advisedly "working up" the public with a vague idea that we are on the eve of a coal panic, and have given, in one instance at least (The *London Daily Telegraph*), special reports from the various colliery districts in support of the notion. Personally speaking—and I may, without egotism, say that I am not speaking entirely "off the book"—I do not think that we shall get through the now rapidly approaching winter without a rise in the price of coal, say to the extent of four or five shillings per ton at the outside, but I certainly opine that last year's famine will not be repeated, unless the general public, frightened by recurring sensational reports, shall foolishly set up an enormous demand (as was the case last winter) far in advance of its real requirements. I have arrived at this conclusion from sundry premises, mainly the result of personal observations and from careful inquiry of persons who are little likely to lead me astray. Personally, again, I have seen thousands of tons of coal stacked in the yard of a great colliery proprietor (not far from this town), who is, also, a nobleman and the owner of immense estates—stacked and deteriorating in value from exposure to the air and weather, but not an ounce to be sold at less than a certain price. Further, in this same district, I could point out a dozen collieries capable of sending up 700, 800, or 1000 tons per diem, which do not yield two-thirds, and often not more than half those quantities, respectfully. Again, at a good many other pits sidings are full of empty wagons waiting to be loaded, about which there is no particular hurry, seeing that prices certainly won't fall, and there is every probability of their going up any day, to say nothing about the enormous accumulations in the yards of the London dealers and merchants, who have been buying all summer in order that they may reap *their* reward when the "winter of our discontent" shall have arrived. The price of this precious—stone, shall I call it?—varies a good deal, say from 13/6 to 40/; the former for steam slack at the pits, and the latter for best house coal in the metropolis. The output of coal in the principal districts is at present estimated at about these figures: Durham and Northumberland, 600,000 tons per week; Shields, 3000 tons; Berwickshire, 700 tons; Derbyshire, 100,000 tons; Yorkshire, over 400,000 tons; North and South Staffordshire, 1,100,000 tons; Worcestershire, 50,000 tons; Lancashire, 250,000 tons; Swansea district, 40,000 tons; Shropshire, 30,000 tons; Monmouthshire, 150,000 tons; North Wales, 150,000 tons; Cardiff district, 250,000 (or more) tons; Scotland, irregular. It will thus be seen that we are, at a low estimate, raising over three million tons per week. How long will our stock endure at that rate? *Nous verrons que nous verrons.* The importance of the question of our fuel supply as the foundation of Great Britain's supremacy in the iron trade must be my apology for having devoted so much space to it, and for having so far abstained from reverting to the state of the iron trade proper. Taking it in detail—as our Teuton neighbors were wont to attack their Gallic foe in the late war—I find that in the north matters are a little more settled after a somewhat stormy period has blown over in the warrant market. The operations of our friends, Messieurs the bulls and bears, in that direction have disturbed the ordinarily routine course of transactions at Glasgow, hence G. M. B. warrants have been very irregular—varying from 119 6 down to the present figure, 115 6 to 116/, and even lower in the *interim*. Makers' prices have, no doubt owing to a slightly increased production, gone down a shilling or two, and are now quoted as under: Gartsherrie, No. 1, 132 6; No. 3, 125; Coltness, No. 1, 135; No. 3, 121; Summerlee, No. 1, 125/; No. 3, 122; Carnbroe, No. 1, 125; No. 3, 119/; Monkland, No. 1, 125/; No. 3, 117 6; Clyde, No. 1, 125/; No. 3, 117/6; Govan, No. 1, 122 6; No. 3, 117 6; Langloan, No. 1, 127 6; No. 3, 120/; Calder, No. 1, 125/; No. 3, 122; Glengarnock, No. 1, 125/; No. 3, 119/; Eglinton, No. 1, 122 6; No. 3, 117/6; Dalmellington, No. 1, 120; No. 3, 117; Carron, No. 1, 125; Shotts, No. 1, 127 6; No. 3, 120/; Kinneil, No. 1, 125; No. 3, 116. Shipments still show a very marked decrease, the falling off up to date being not less than 36,195 tons, as compared with the corresponding period of last year. Total shipments are now 447,181 tons. The Scotch manufactured iron trade is rather better employed—almost wholly on orders, as contrasted with what is occasionally done on "speculation." From the Cleveland district of this county (Yorkshire) private reports speak of a continuance of the improvement alluded to last week. Out of a total of 137 blast furnaces in this locality, 127 are in operation, and 21 others are in course of erection, mostly in the vicinity of Middlesborough. Iron rails are quoted at £12 to £12. 10 per ton, although one or two firms, who have their own collieries and iron mines, are willing to supply any quantity at £11 to £11. 10/ per ton. At the end of this month the present scale of wages in the Cleveland district expires, and a revision will take place, the new rate of payment to be determined in the usual manner, by the prices realized for finished iron during the past six months. It is believed that wages will be lowered to a certain extent. Should this be the case, it will no doubt afford some relief to the iron trade, and may possibly be brought forward as a precedent in other parts of the kingdom. Throughout the whole Furness district, and Lancaster, as a whole, trade is rather better, and a good stroke is being done in bars, hoops, plates and sheets at stiffer prices. Bars are quoted £12. 5 to £12. 10/; pit rails, £12. 10; hoops, £13. 10/ to £13. 15; and sheets, £14. 15 to £15 per ton. No. 3 pig is not to be had under £5. 15/, delivered around Manchester, Bury or Bolton. In South Yorkshire and the busy industrial tract of which Sheffield is the "head center," the iron market maintains the firmness which characterized it at the time of my last report. Very little Yorkshire pig has changed hands in the open market, but transactions have come to my knowledge in which makers have been enabled to effect sales of No. 3 at about 2/6 higher than the rates current last month, and in some instances an advance of 5/ has been asked and obtained. Ores are still dear, and are likely to advance even further—partly caused by the sudden stoppage of Spanish descriptions, owing to the mines at and near to Bilbao having fallen into the hands of his would-be Majesty, Don Carlos, who has closed them for the present. This lamentable step will be unfortunate for Spain, more so than for this country even, seeing that in 1872 631,134 tons of iron ore were exported thence as against 88,770 tons in 1868. This immense increase has chiefly been sent to Cardiff, Sheffield and Newcastle, and had all been pacific, would have been largely augmented this year, two Sheffield firms—John Brown & Co. and Charles Cammell & Co.—having arranged to import one million tons per annum. Consequent upon this interruption British hematites have improved 2/ or so per ton, and oolites from Northamptonshire have a stiffening tendency. A great deal of ironstone has recently been conveyed hither from the last named district, as well as from North Lincolnshire and Northeast Derbyshire. Finished iron is certainly firmer in all respects, and several West Yorkshire manufacturers decline to sell their produce under 7/6 to 10/ per ton over recent rates. Best bars are therefore £14. 10/ to £15. 10; secondary, £14 to £14. 10; and ordinary £13 to £14, or in some instances as low as £12. 10/. Plates are in particularly good request, ordinary being worth £16 to £17, and superior makes £1. 10/ to £2 more. Charcoal iron is in steady request, plates made therefrom for special purposes by the two or three houses engaged in this branch being eagerly snapped up at full prices.

In Bessemer steel considerable activity is observable, both in the rough material as ingots, blooms, etc., and in the shape of rails, axles or tires. These are in better request. Iron rails are not being dealt in just now to any great extent for railroad purposes, but for certain other undertakings I hear of sales having been effected at £11 and £11. 5/. The general steel trade is unaltered. Saturday is still a *dies non* at the leading firms, and in some cases nothing is being done on time-honored Saint Monday; but there is, on the whole, sufficient work to keep manufacturers from putting into strict execution the resolution which they arrived at some time back—to close altogether three days per week.

For the better qualities of cutlery I hear of a much better inquiry from the United States. Stocks there of really fine goods of this description—table, penknife and other classes—are stated to be rather light, although common kinds of both English and German are in plentiful supply.

The dullness of your market is, inelegantly speaking, playing the very deuce with the manufacturers of certain kinds of cutlery, and has had the effect of throwing a number of workmen wholly or in great part idle. Australia sends us good commissions for light edge tools, saws, files and one or two classes of hardware goods in addition to sheep shears, and will, it is hoped, one day prove a sure refuge for our cutlery manufacturers in the event of the total defection of your trade. In the Birmingham district prices have begun to go up, consequent upon an increase of activity in business. Certain hardwares—sheets, strips, plates, angles, gas tubes and fittings, iron bedsteads, etc., are in good request and prices are firm. Pig iron is higher to the extent of 5/ to 7/6; all mine are quoted £6. 15/ to £7.; and cinder, £4, 15/ to £4. 17/6; finished iron is stiffer, sheets (single) being £15.; Galvanized roofing sheets £24. 10/; bars, £14; Lord Dudley's, £14. 12/6; second class bars, £12. 15/ to £13.; angles, £15; hoops, £14, and mill rods, £12. 10/. These are, it is believed, not likely to be reduced, and there is a possibility, one may almost say a probability, of their being advanced within the next month. South Wales is yet fairly busy, mostly, as always, on rails. Dowlais sent a couple of cargoes to the United States last week; Blaenavon and Ebbw Vale, rails in large lots to Ibrail; Aberdare to Paysanda and Dowlais to Gefle. The rumored sale of Cyrfarthfa Works by Crawshay to a syndicate (not a "Limited Company"), appears to be accurate. The amount was in the first instance stated at £1,250,000, but I now hear that the actual amount is £750,000 for the works only, Mr. Crawshay reserving the canal, farm, castle, private grounds and quarries at Vaynon. Three companies were in treaty for the purchase, and, as might be expected, a great deal of eager competition was displayed. The strike of last year and trades' union intrigues have broken Mr. Crawshay's faith in his men, and have brought dissension and strife where they were never before known.

The metal trade is more active throughout, and, with the exception of tin, prices have advanced. Messrs. Von Dadelzen & North report as follows: Copper.—A considerable amount of business continues to be done, both in Chili and Australian, and prices are dearer. Chili bars, ordinary brands, have realized up to £86 cash, £87 two months, and £87. 10/, with three months prompt, closing thereat. Wallaroo, £94. 10/ to £95. 10/, three months prompt; Burra from 10/ to 20/ per ton less. English is very firm; best held for £95; tough, £93. The charters for the first fortnight of August have been telegraphed as 1600 tons. Tin continues dull, and it is difficult to effect sales. Straits is obtainable at £127, spot and to arrive; Banca has been sold in small lots at £132; Billiton is obtainable at £127. The Dutch market is steady, at 78½f. for Banca. English tin is firm, at £128 for ingots. Tin plates continue neglected, and dull of sale. Lead has further improved; good ordinary soft pigs, £23. 15/ to £24. Spelter continues scarce, but rather more offered to arrive. Ordinary Silesian is nominally £27 10/, and the same in outports, £26 to £26. 10/ for special brands.

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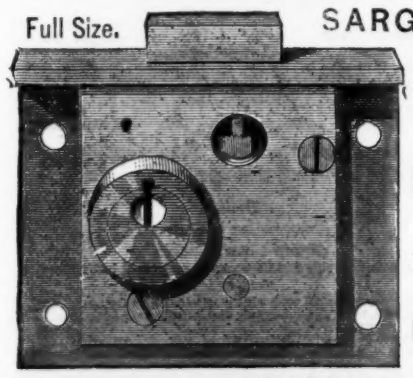

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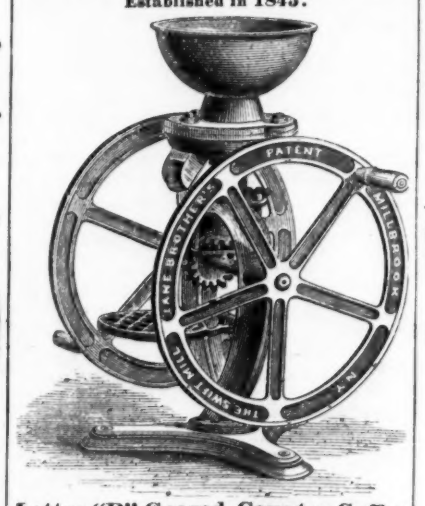

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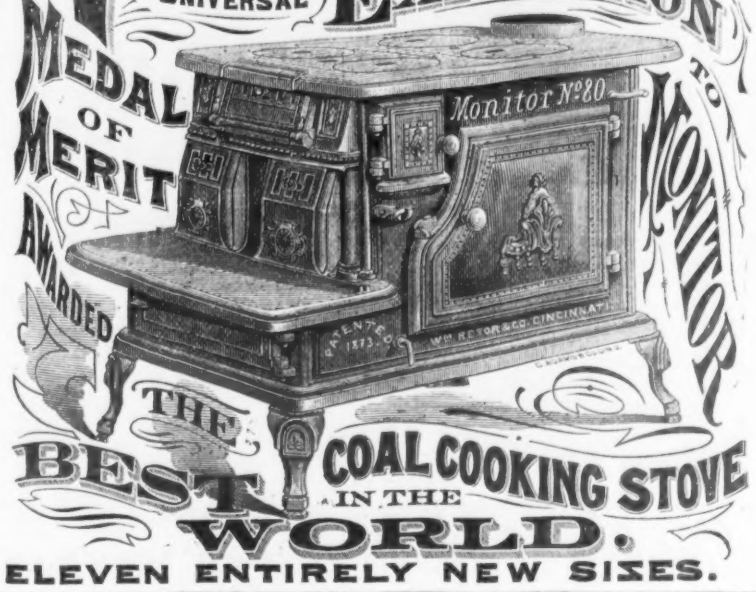

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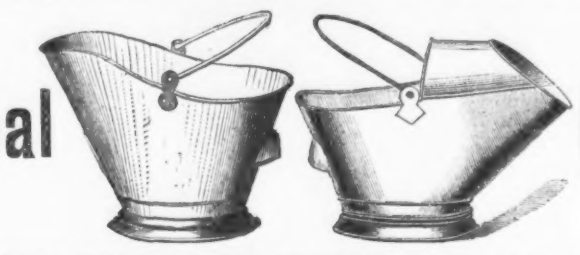
Coal  Hods.

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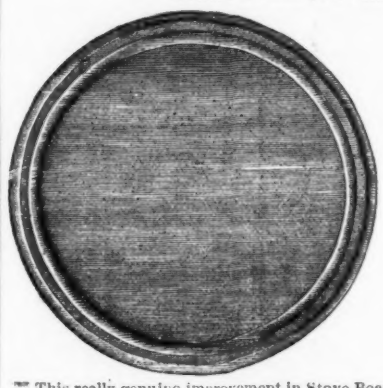

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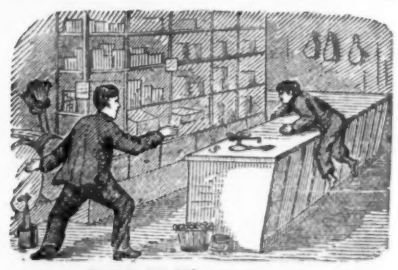

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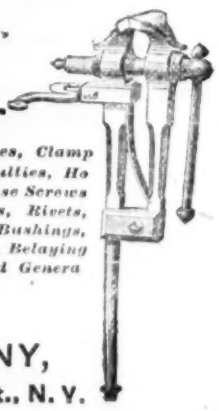

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Hart Mfg. Co., Crank and Pull ... new list dis 50 %
Cow—Common Wrought ... new list dis 33⅓ %
Western ... new list dis 33⅓ %
Kentucky "Star" ... new list dis 20 %
Dodge's Genuine Kentucky ... new list dis 25 %
Yaw's Genuine ... dis 20 %

Bellows.
Blacksmiths' ... dis 10 %
Moulders' ... dis 15 %

Blind Fasteners.
Van Sand's ... ₱ gross $14 00
Washburn's Patent ... ₱ gross 14 00
Merriman's ... add 35 @ 40 %

Blind Staples.
Boardman's Patent, ⅜ in. and larger ... ₱ ℔ 37½c
" ⅝ in ... " 42 c

Bolts.
Carriage and Tire, Ætna Nut Co ... dis 60 %
Stove, Ætna Nut Co ... dis 10&5 %
Cast Iron Barrel, Shutter, &c ... old list dis 50&10 %
Wrought Iron Barrel ... net
" " Square ... dis 10&10 %
Carriage and Tire, Common ... dis 70&10 %
" " " Norway Iron ... dis 40 %
Star, Philadelphia ... dis 40 %
Eagle, Philadelphia ... dis 40 %
Philadelphia Pattern, P. S. & W ... dis 50&10 %
Carriage and Tire, R. B. & W ... old list dis 50&5 %
Plow, R. B. & W ... dis 30 %
Stove, R. B. & W ... dis 10 %
Union Nut Co ... dis 50&15 %
Machine ... dis 25 @ 30 %

Borax.—Per case of 100 lbs ... ₱ ℔ 22c

Boring Machines.
Kellogg's ... dis 10 @ 15 %
Snell Mfg. Co., Rice's Patent ... dis 15 %
" " Regular ... dis 15 %
Douglas Mfg. Co ... dis 20 %
Hovey's Angle ... $6 00 @ 6 25
" Upright ... 4 25 @ 4 50
Morticing Machines each ... $18 00

Bow Pins. ... dis 45 @ 50 %

Braces.
Barber's Patent ... dis 40 %
Wilson Mfg. Co ... net @ add 5 %
Spofford's Patent ... dis 40 %
Noble's Patent ... dis 33⅓ %
Bartholomew's American Ball ... dis 10&10 %
" Patent Grip ... dis 40 %
Q. S. Backus & Co ... dis 30&10 %

Bung Hole Borers.
Common and Ring ... dis 20 %
Enterprise Mfg. Co ... dis 20&5 %
Ives' Tap Borers ... dis 20 %

Butchers' Cleavers.
Bradley's ... dis 15 %
Beatty's ... new list dis 10 %

2	3	4	5	6	7	8	9
$19·00	$21·50	$24·00	$27·00	$30·00	$33·50	$36·50	$40·00

Hart Mfg. Co ... dis 45&10 %

0	1	2	3	4	5	6
$25·25	$29·75	$30·25	$38·75	$43·55	$48·50	$54·00

Butts.
Wrought Brass ... new list dis 20 %
Cast Fast Joint, Narrow ... dis 40 %
" " Broad ... dis 40 %
Cast Loose Joint ... dis 50 %
" " Mayer ... dis 40 %
" " Parliament ... dis 40 %
Loose Pin ... dis 40&10 %
Wrought Fast Joint, Narrow ... dis 30&5 %
Wrought Broad ... dis 35 %
" Loose Joint ... dis 25&5 %
Wrought Table and Back Flaps ... dis 25&5 %
Cast Butts, Ohio Butt Co.—
Narrow Fast, Drilled and Wire Jointed (old list) ... dis 35 %
Broad Fast, Drilled and Wire Jainted ... dis 35 %
Broad, Loose, Drilled and Wire Jointed ... dis 45 %
Silver Tipped ... dis 45 %
Loose Joint, Japanned ... dis 25 %
Loose Joint, Acorn and Silver Tipped ... dis 40 %
Palmer Blind Butts ... dis 30&10 %
Nicholson Blind Butts ... dis 40&10 %
Parker's Blind Butts ... dis 40&10 %
A. S. Parker's ... dis 40&10 %
Clark's Blind Butts ... dis 40&10 %
Clark's Blind Hinges, No. 20 ... dis 50&5 %
Seymour's ... dis 40&10 %
Shepard's ... dis 40&10 %
Garretson's ... dis 40&10 %
Standard ... dis 40&10 %
Union Mfg. Co.—
Drilled and Wired Cast Fast ... dis 35 %
" " " Loose ... dis 45 %
Loose Joint Japanned or Silvered Acorn ... dis 40 %
" " Figured Enameled ... dis 25 %
" " Nickel Capped ... dis 30 %
" " Solid Bronze ... dis 10 %

Caps—Percussion, per 1000.
G. D ... 40c
Ely's E. B ... 1-4s, 60c ; 1-10s, 67½c., gold
" Double Waterproof, 1-4s, $1·50 ; 1-10s, $1·51½c., gold
Colt's ... 1-4s, 72½c ; 1-10s, 82½c., gold

Cartridges.
Metallic ... dis 50 %

Cards.
Horse and Curry ... dis 25&10 %
Cotton ... new list dis 10&10 %
Wool ... new list dis 10&10 %

Casters.
Iron and Wood Wheel Plate ... new list dis 20&10 %
Brass Wheel Plate ... new list dis 20&10 %
Porcelain Wheel Plate ... new list dis 20&10 %

Chain.
English Coil ... net gold

₱ ℔	13½	10	9½	8½c	8½	8¼c
	3-16	¼	5-16	⅜	7-16	½

Trace, 6½-10-2 ... ₱ pair, gold, 62c
Trace, 7-10-2 ... ₱ pair, gold, 67c
Galvanized Pump Chain ... ₱ ℔ 14c
German Halter Chain ... new list, gold, dis 25 %
German Coil ... new list, gold, dis 25 %
Jack Chain, Iron ... dis 35 @ 40 %
" Brass ... dis 20 @ 25 %

Chalk.
White ... ₱ gross, 60c
Red ... ₱ gross, 80c
Blue ... ₱ gross, 90c
Crayons ... ₱ gross, 14c

Cherry Stoners.
"Family" ... ₱ doz $9·00

Chisels.
Socket Firmers ... dis 60&5 @ 60&10 %
Socket Framing ... dis 60&10 %
Socket Corner ... dis 60&10
Tanged Firmers ... dis 40 to 40&10 %
Butcher's ... $5·50 to £ gold—new list
Newbould's ... $5·50 to £ gold
Spear & Jackson's ... $5·50 to £ gold—new list

Clips, Axle.
Norway or Best ... dis 20 @ 30 %
Superior ... dis 40&5 %
"Star," Superior, Philadelphia ... dis 45&5 %

Coal Shovels.
Iron Handled ... ₱ doz, $ 85 @ 1 25
Wooden Handled ... ₱ doz, 1 00 @ 2 00

Coal Hods.
Smith, Burns & Co ... dis 25 %

No.	14	15	16	17	18	
Japanned	$9·00	9·75	10·50	12·00	13·50	per doz
Galvanized	13·00	14·59	15·50	17·50	19·50	"

Cocks.
Brass Racking ... dis 20&10 %
Lock and Globe ... dis 20&10 %

Coffee Mills.
Board and Box ... dis 15 %
Increase Wilson's ... new list dis 10 %
Selsor's Pat ... $9·50, $10·50—dis 20 %
French Steel ... dis 10 @ 20 %
"Champion" ... dis 20 %
Swift's ... dis 20 %

Compasses and Dividers.
Bemis ... dis 15&15 @ 20&5&15 %
Excelsior ... dis 30 %
Peck Stow & Wilcox ... dis 25 %

Coopers' Tools.
Bradley's ... dis 15 @ 20 %
Chas. E. Little ... dis 15 @ 20 %

Corn Knives and Cutters.
Bradley's ... list net

Crucibles.
Gautier & Co ... ₱ No. 5½c

Curry Combs.
Hotchkiss' and Kellogg's, Iron and Brass ... dis 15 %
Fitch's ... dis 15&10 %
Ruggles' ... dis 15 @ 20 %
Rubber ... ₱ doz, $9·00—dis 10 %
Schweitzer Mfg. Co ... dis 20 %

Curtain Pins.
Silvered Glass ... dis 40&10 %

Cutlery.
American Table ...
American Pocket ... dis 15 %

Door Springs.
Gray's ... $7·50 per doz—dis 40&10 %
Torrey's Patent ... $7·50 ₱ doz—dis 40 @ 40&10 %
Palmer's Japanned No. 6 ... ₱ doz $5·00
" Coppered " ... " 6·00
" Silvered " ... " 8·00
Challenge.—
Japanned ... ₱ doz $4 00 @ 6 00
Bronzed ... ₱ doz 5 00 @ 7 00
Nickel Plated ... ₱ doz 6 50 @ 9 00
1 Gross lots ... dis 10 %
5 Gross lots ... dis 20 %

Drawing Knives.
... dis 60 @ 60&10 %
Bradley's ... dis 25 %

Drills.
Ingersoll's Ratchet ... dis 25 %
Moore's Triple Acting Ratchet ... dis 20 %

Egg Beaters.
Monroe's ... ₱ doz net $8·25 @ 8·50
Ashley's ... ₱ doz net 2·25 @ 3·00
Earle's Patent ... ₱ doz net 5·50 @ 6·00
Pratt's Aerating ... dis 10 %
Dover ... ₱ doz net $6·00

Emery.
Genuine Chester—Regular Nos ... ₱ ℔ 8c } dis 5 @ 10 %
" Flour and FF ... ₱ ℔ 5c }
Washington Mills—Regular Nos ... ₱ ℔ 8c
" Flour ... ₱ ℔ 5c

Enameled and Tinned Ware.
Kettles ... dis 15 %
Sauce Pans, Glue Pots, &c ... dis 10 %

Faucets.
Cork Lined, Wood ... dis 60 %
Fenn's ... dis 50 %
" Cork Stops ... dis 40 %
Star ... dis 55&10 %
Frary's Patent Petroleum ... dis 10&10 %
Taylor's Pattern " ... dis 20&10 %
Wood and Metallic ... dis 40 %

Files.
Nicholson ... $5 00 to £ currency
Newbould's ... 5 50 to £ gold
J. & Riley Carr's ... 5 50 to £ gold
" " Rasps ... 5 75 to £ gold
Stubs' ... 8 50 to £ gold
Butcher's ... 5 50 to £ gold
Spear & Jackson's ... 5 50 to £ gold
Hargreaves, Smith & Co.'s ... 5 00 to £ gold
Jowitt's ... 5 25 to £ gold
"Western" ... 5 00 to £ net
W. K. & C. Peace's "Imperial" ... 5 25 to £ gold
R. Ibbotson ... 5 00 to £ gold
Beam & Murray, "Cyclops" ... 4 85 to £ gold
Fisher's ... 4 75 to £ gold
Goodlad's ... 4 50 to £ gold
Moss & Gamble ... 5 25 @ 5 50 to £ gold

Fluting Machines.
Acme ... $7 00 each net
Cole ... 5 75 each net
Manville, No. 2 ... 7 00 each net
Knox, with 4-inch Rolls ... 5 00 each net
" " 6 " " ... 6 00 each net
O. K ... 6 50 each net
Peerless, 4-inch Rolls ... 4 00 each net
" 5 " " ... 5 60 each net
Excelsior, No. 1 ... 4 75 each net
" No. 2 ... 6 50 each net
Diamond ... 7 50 each net
Climax 7-inch Rolls ... 8 00 each net
" 4½ " ... 6 50 each net
Empire ... 4 00 each net
Eureka, No. 1, 7-inch Roll ... 8 00 each net
" No. 2, 5-inch Roll ... 6 00 each net
K. F. M., 4-inch Roll ... 5 50 each net
" 6-inch Roll ... 6 00 each net
Myers' Fashion Fluter, 4½-inch Rolls ... 3 00 each net
" Convex Brass Fluter, Sad Iron attachment ... $1·75
Domestic Fluter ... $1·75 each net
Fairy, Self-Heater ... 10 00 each net
National, 5-inch Rolls ... 5 00 each net
Ponton Fluter, Bright ... $1 50—dis 25 %
" " Galvanized ... 2 00—dis 25 %
Geneva Hand Fluter ... $1 25 each net

Fry Pans.
Tinned ... dis 20 %

₱ doz	$3·00	3·25	3·62	4·00	4·50	5·00	5·50	6·00	7·50
No.	0	1	2	3	4	5	6	7	8

Peck, Stow & Wilcox ... dis 25 %
Smith, Burns & Co., "Excelsior" Polished ... dis 20 %

₱ doz	$3·70	4·00	4·70	5·30	6·00	7·00	8·00	9·00
No.	1	2	3		5	6	7	8

Hammers.
Emmet Hammer Co ... dis 10 %
Maydole's ... new list net
Cheney's ... new list net
Verree ... dis 5 %
Yerks & Plumb ... new advanced list dis 5 @ 10 %
Minot & Co ... dis 15 %

Handles.
Hammer and Hatchet ... dis 10 %
Quakertown, Axe, Pick and Sledge ... dis 10 %
" Hammer and Hatchet ... net
Greensboro', Axe, Pick, Hammer, &c ... dis 10 %
Woolworth Axe, Pick and Sledge ... dis 10 %

Harness Snaps.
Judd's ... dis 30 %
Fitch's ... dis 30 %

Hatchets.
Isaiah Blood ... dis 10 %
Shingling, Nos. 1 2 3 ... ₱ doz $7 50 8 00 8 50
Claw, " 1 2 3 ... ₱ doz 8 50 9 00 9 50
Lathing, " 1 2 3 ... ₱ doz 7 50 8 00 8 50
Hunt's ... net
Shingling, Nos. 1 2 3 ... ₱ doz $7 25 8 00 8 75
Claw, " 1 2 3 ... ₱ doz 7 75 8 50 9 25
Lathing, " 1 2 3 ... ₱ doz 7 50 8 25 9 00
Hurd's ... dis 20 %
Shingling, Nos. 1 2 3 ... ₱ doz $8 00 8 50 9 00
Claw, " 1 2 3 ... ₱ doz 9 00 9 50 10 00
Lathing, " 1 2 3 ... ₱ doz 8 00 8 50 9 00
Newark's Edge Tool Co.'s ... dis 25 %
Shingling, Nos. 1 2 3 ... ₱ doz $6 50 7 00 7 50
Claw, " 1 2 3 ... ₱ doz 7 25 7 75 8 25
Lathing, " 1 2 3 ... ₱ doz 6 50 7 00 7 50
Yerks & Plumb ... dis 10 %
Shingling, Nos. 1 2 3 ... ₱ doz $7 00 7 50 8 00
Claw, " 1 2 3 ... ₱ doz 7 50 8 00 8 50
Lathing, " 1 2 3 ... ₱ doz 7 00 7 50 8 00
Simmon's ... dis 10 @ 15 %
Shingling, Nos. 0 1 2 3 ... ₱ doz $7 50 8 00 8 50 9 00
Claw, " 1 2 3 ... ₱ doz 9 00 9 50 10 00
Lathing, " 1 2 3 ... ₱ doz 8 00 8 50 9 00
Broad, " 1 2 3 ... ₱ doz 9 00 10 00 12 00
" " 4 5 6 ... ₱ doz 14 00 16 00 18 00
" " 7 8 ... ₱ doz 20 00 22 00
Elephant ... dis 20 %
Shingling, Nos. 1 2 3 ... ₱ doz $8 00 8 50 9 00
Claw, " 1 2 3 ... ₱ doz 9 00 9 50 10 00
Lathing, " 1 2 3 ... ₱ doz 8 00 8 50 9 00
J. P. Verree & Co ... dis 5 %
Shingling, Nos. 1 2 3 ... ₱ doz $7 00 7 50 8 00
Claw, " 1 2 3 ... ₱ doz 7 50 8 00 8 50
Lathing, " 1 2 3 ... ₱ doz 7 00 7 50 8 00
Underhill's ... dis 10 %
Shing'ing, Nos. 1 2 3 ... ₱ doz 7 25 8 00 8 75
Claw, " 1 2 3 ... ₱ doz 7 75 8 50 9 25
Lathing, " 1 2 ... ₱ doz 11 00 12 00

Hinges.
Wrought Strap and T ... dis 30&7½ %
Providence Plate ... { 6 and 8 in. list 11c. } { over 8 in. list 9½c. } dis 10&5 %
Screw Hook and Strap ... { 8, 10, 12 in. 8½c } { 14 to 36 in. 7½c } ... net

Hoes.
Solid Shank, C. S ... ₱ doz $8 00—dis 20 @ 25 %
Socket ... ₱ doz 9 00—dis 20 @ 25 %
Riveted Eye ... ₱ doz 5 00—dis 20 @ 25 %
Grub ... dis 20 %
Planters'—Winsted ... add 10 %
Scovill ... add 33⅓ %
Scovill Pattern (Winsted) ... add 20 %

Hooks.
Belt ... dis 50 %
Bench ... ₱ doz net $5 00 @ 8 50
Wardrobe, Japanned ... new list dis 10&10 %
Hat and Coat " ... new list dis 15&10 %
Wrought Staples and Hooks and Staples ... dis 60 %
Wrought Hasps and Staples and Hasps, Hooks and Wrought Staples ... dis 60 %
Screw Hooks and Eyes, revised list ... dis 65&10 %

Horse Nails.
Putnam's.

No.	5	6	7	8	9	10
	32c	28c	26c	25c	24c	23c

In lots 2000 lbs. dis. 5 %.
Ausable.

No.	5	6	7	8	9	10
	30c	7c	25c	24c	23c	22c

In lots of 1000 lbs. 5 % discount.
Brundage.

No.	5	6	7	8	9	10
	29c	26c	24c	23c	22c	21c

In lots of 500 lbs., dis. 5 %.
American Pressed.

No.	5	6	7	8	9	10
	22c	20c	20c	20c	20c	20c

In lots of 1300 lbs. dis 5 %.
Perkins Finished (ready to drive).

No.	5	6	7	8	9	10
	31c	28c	26c	25c	24c	23c

In lots of 1000 lbs. dis 5 %.
Buffalo Forged.

No.	6	7	8	9	10
	28c	26c	25c	24c	23c

Globe (Pointed and Polished).

No.	5	6	7	8	9	10
	31c	28c	26c	25c	24c	23c

In lots of 1000 lbs., 5 % discount.
National (Pointed and Polished), Extra Finish.

No.	5	6	7	8	9	10
	30c	27c	25c	24c	23c	22c

In lots of 1000 lbs., dis 5 %.
Vulcan (Blued, pointed, ready to drive).

No.	5	6	7	8	9	10
	33c	30c	28c	27c	26c	25c

In lots of 500 lbs., 5 % discount.
" 1000 lbs 7½ % discount.
New London Horse Nails.

No.	6	7	8	9	10
Great Western	27c	25c	24c	23c	22c
U B	29c	27c	26c	25c	24c

In lots of 1000 lbs., dis 5 %.
Star Brand ... ₱ ℔ 16c
Morgan ... 16c

Horse Shoes.
Burden ... ₱ keg, $6 37½
Shoenberger ... ₱ keg, 6 37½
R. I. Horse Shoe Co., Perkins Pattern ... ₱ keg, 6 87½
" " R. I. Pattern ... ₱ keg, 6 87½
Mule Shoes ... ₱ keg, 7 87½

Kettles.
Enameled ... dis 15 %
Brass ... ₱ ℔ 50c
In lots of 500 ℔s ... ₱ ℔ net 45c

Knives.
Ames' Butcher Knives ... dis 20 %
" Shoe " ... dis 15 %
Hay and Straw, "Wadsworth's" ... dis 20 %

Knobs.
Base—Common ... net
" Plush Tip ... dis 10 %
" Elastic End ... reduced list dis 10&10 %
Trenton Lock Co ... dis 40 %

Lanterns.
Brady's Patent ... dis 10 %
Ætna ... dis 10 %
Yankee ... dis 10 %
De Beque ... dis 10 %

Locks and Latches.
Cabinet—Eagle ... dis 25 %
Cabinet—Gaylord ... dis 25 %
Trunk ... dis 10 %
Continental ... dis 15 %
Shepardson's ... dis 20 %
Trenton Lock Co ... dis 40 %
Branford ... dis 40 %
Norwich ... dis 40 %

Meat Cutters.
Dixon's (P. S. & W.) ... dis 10 %

No.	1	2	3	4
₱ doz	$14 00	$17 00	$19 00	$30 00

Hales' ... dis 25 %

No.	11	12	13
₱ doz	$27 00	$33 00	$42 00

Perry's Champion (P. S. & W.) ... dis 10 %

No.	200	300	400
₱ doz	$22 00	$27 00	$40 00

Woodruff's (P. S. & W.) ... dis 10 %

No.	100	150
₱ doz	$15 00	$18 00

American ... dis 25 @ 25&5 %

No.	1	2	2½	3	4	5
Each	$6 00	$9 00	$14 00	$15 00	$30 00	$75 00

Molasses Gates.
Stebbins' Pattern ... dis 60&10 %
Tinned ends ... dis 40&10 %
Weed's Patent Self-Boring ... dis 15 %
" without Auger Bit ... dis 40 @ 50 %
Patent Self-Measuring ... per doz $42 00—dis 20 %

Mouse Traps.
Wood Choker ... ₱ doz holes, 16 @ 20c

Nails.
10d Cut (Standard) ... $4 75

Nuts and Washers.
Nuts ... large, 4c ; small, 5c off list.
Washers ... large, 5c ; small, 7c off list.

Oil Stones.
Washita No. 1 ... ₱ ℔ 22c
" Slips ... ₱ ℔ 44c
Hindostan ... ₱ ℔ 6c dis 10 %
" Slips ... ₱ ℔ 10c dis 10 %

Oilers.
Olmsted's ... dis 25&10 %
Broughton's ... dis 25&5 %
Common Zinc, Brass and Copper ... dis 25 %

Picks.

Washoe R. R. Nos.	1	2	3	4	5
₱ doz...	$14·00	15·00	16·00	17·00	18·00
Washoe Coal, " ... $8·50	9·00	10·00	11·00	13·00	15·00

Picture Nails and Knobs.
Richards' Patent ... dis 40 @ 40&10 %

Planes.
Sandusky Tool Co., 1st quality ... dis 20 %
" " 2d " (Ogontz) ... dis 20&10 %
Ohio Tool Co., 1st quality ... dis 20 %
" " 2d quality (Sciota) ... dis 20&10 %
Owasco Tool Co., 1st quality ... dis 25 %
" " 2d quality ... dis 25&10 %
Plane Irons ... list net
" Butcher's ... $5 50 to £ gold—new list
" Spear & Jackson's ... 5 50 to £ gold—new list
" Sandusky Tool Co ... list net

Plumbs and Levels
Standard Rule Co.'s New Adjustable ... dis 50&10 %

Pumps.
Douglas Cistern, etc ... new list dis 25 %
" S. & F ... new list dis 20 %

Rakes.
Cast Steel ... dis 25 %

$8 00	9 00	10 00	11 00
8	10	12	14 teeth.

Razor Straps.
Genuine Emerson (B. F. Badger) ... dis 40&10 %
Hunt's ... dis 25&10 %
Chapman ... dis 10 @ 15 %

Rivets.
Iron and Tinned ... dis 25 %
Copper Rivets and Burrs ... dis 10 %

Rods.
Stair ... new list dis 25 %
American Patent ... dis 25 %

Rope. Manufacturers' List
Manila ... ½ inch and larger ₱ ℔ 18 c
" ... ⅜ inch ₱ ℔ 18½c
" ... ¼ and 5-16 inch ₱ ℔ 19 c
" Lath Yarn ... ₱ ℔ 19 c
" Hay Rope ... ₱ ℔ 18½c
Sisal ... ½ inch and larger ₱ ℔ 16 c
" ... ⅜ inch ₱ ℔ 16½c
" ... ¼ and 5-16 inch ₱ ℔ 17 c
" Hay Rope ... ₱ ℔ 16½c

Rules.
Hubbard & Curtiss Mfg. Co ... new list net
Stanley Rule and Level Co.'s Ivory ... dis 50&10 %
" " " Boxwood ... dis 6 &10 %
Standard Rule Co.'s Boxwood ... dis 60&10 %
" " " Ivory ... dis 50&10 %

Sad Irons.
... ₱ ℔ 4¾c net
Sad Iron, Nickel Stand attached ... ₱ ℔ 9c

Sand Paper—dis 7½ @ 10 %
Beader & Adamson's (Flint) 00 to 1½ ... $4 50 ₱ ream
" " " 2, 2½ & 3 ... 5 00 "
Assorted ... 4 50 "
Star ... ₱ ream $3 50
Emery ... ₱ ream $7 00 @ 12 00
Cowdin Mfg. Co ... dis 7½ @ 10 %
Diamond Flint, 00 to 1½ ... per ream $4 50
" 2, 2½, 3 and assorted ... " 5 00
" Emery Paper ... per ream $7 00 to 13 00

Sash Locks.
Clark's ... dis 20 %
Ferguson's ... dis 20 @ 25 %
Champion ... ₱ gross $13 00 @ $15 00
Norwich ... dis 15 %

Sash Weights.
Solid Eyes ... ₱ ℔ 2¾c

Sausage Fillers.
Perry's (P. S. & W.) ... dis 10 %

No.	1	0
₱ doz	$15 00	$21 00

Saw Rods.
... dis 10 %

Saws.
Spear & Jackson's ... $4 50 to £ gold
John Spear ... $3 60 to £ gold
Am. Saw Co ... new list
Perforated Cross Cuts, all kinds ... 68c ₱ foot
Inserted Tooth ... dis 10 %
All else ... dis 12½ %
Disston's ... dis 12½ %
H. W. Peace's Circulars ... dis 10 %
Other kinds ... dis 10 %
Wm. McNiece's Hand, Cross Cut and Circular ... new list dis 10 %
E. M. Boynton's Lightning ... dis 30 %
" " Others ... dis 10 %

Scales.
Brown's ... dis 25&5 %
Fairbanks' ... new list dis 15 @ 20 %
Howe's ... dis 15&5 %
Shattuck's Counter and Union ... dis 15 %
National Platform ... dis 25 %
Eureka ... dis 25 %
Scale Beams ... dis 20 %
No. 1 300 to 1200 lbs ... 90c ₱ cwt
No. 2 " " ... 75c ₱ cwt

Screws.
American list of April 1, 1873.
Flat Head Iron ... dis 47½ %
Round Head Iron ... dis 45 %
Flat Head Brass ... dis 60 %
Round Head Brass ... dis 50 %
Round Head Silver Capped ... new list dis 20 %
Hand Rail ... dis 30 %
Coach or Lag ... dis 25 %
Coach, Patent Gimlet Point ... dis 15 %
Bed ... list net

Scythes.
Blood's German Steel, Grass ... ₱ doz $9 00
" Cast " " ... ₱ doz 10 00
" Silver " " ... ₱ doz 11 00
" German " Grain ... ₱ doz 13 00
" Cast " " ... ₱ doz 14 00
" Red Rover ... 12 00
" Young America ... 9 50
" Silver Clipper ... 12 63
Scythe Snaths ... dis 20 %

Shears.
Cast Steel ... dis 60&10 %
Conn. Cutlery Co., new brand ... dis 60 %
Rowe's ... dis 50&10 %

Shovels and Spades.
Ames ... new list dis 10 %
Rowland ... new list Feb. 8, '73, dis 20 %
Old Colony ... dis 2½ %

Shovels and Tongs.
Iron Head ... list net
Brass Head ... dis 5 %
Polished Steel ... new list dis 15 %

Slates.
Square Frames, Round Cornered, by case ... dis 60&10 %
Less than a case ... dis 50 @ 55 %
Oval Frames, by case ... dis 40 @ 40&10 %
Less than a case ... dis 30 %

Spoons.
Iron ... new advanced list, dis 10 %
By the case ... dis 20 %
Britannia ... dis 40 %
Plated A 1 ... revised list dis 30&5 %
German Silver ... revised list dis 15&5 %
Tinned (P. S. & W.)—
Teas ... $1·50 ₱ gross, net
Tables ... 2·75 " net

Stocks and Dies.
... dis 15 %

Stove Polish.
Joseph Dixon's ... ₱ gross, $6 00 @ 6 25
National ... ₱ gross $4 75
Gold Medal ... ₱ gross $6 00, dis 15 %
Gem ... ₱ gross $5 00, dis 10 %

Squares.
Steel ... dis 50 % ; full cases, dis 50&10 %
Iron ... dis 50 % ; full cases, dis 50&10 %
Nickel Plated ... add $2 50 @ $4 00 ₱ doz net
Try Squares and T Bevels ... dis 45&10 %
Star Try Squares and Bevels ... dis 30 %

Tacks.
Full Weight American Iron ... dis 35&7½ %
Half Weight American Iron ... dis 67½&7½ %
Carpet ... dis 7½ %
Brads American Half Weight ... dis 50&7½ %

Finishing Nails	½	⅝	¾	1	1¼ in. and over
₱ ℔	25c	20c	18c	14c	13c dis 7½ %
Trunk and Clout	½	⅝	¾	1	1¼ in. and over
₱ ℔	25c	20c	18c	14c	13c dis 7½ %

Copper Tacks ... ₱ ℔ 56c—dis 7½ %
Iron Shoe Nails, ₱ ℔ 4-8 and longer, 10½c ; 3½-8, 11c ... dis 7½ %
Double Pointed ... new list dis 33⅓ %

Tapes, Measuring.
American Flask and Cap Co ... dis 10&10 %
Eddy's ... dis 10&10 %

Toe Calks.
... ₱ ℔ 13c net

Tobacco Cutters.
Champion ... dis 20 %
Peck, Stow & Wilcox ... dis 10 %

Tinners' Tools and Machines.
P. S. & W ... list net

Traps.
Newhouse ... dis 20 %
Hotchkiss ... dis 20 %
Peck, Stow & Wilcox ... dis 30 %
Blake's Patent ... dis 15 @ 20 %

Vises.
Trenton Vises, Solid Box.
30 to 110 lbs ... 17c
111 to 160 lbs ... 18c
160 and over ... 21½c
Peter Wright's ... ₱ ℔ 15½c. gold
Wilson's Solid Box ... dis 10 @ 15 %
89 to 160 lbs ... 18c
160 and upward ... 21c
Backus & Union, Parallel ... dis 25 %
Buffalo, Parallel ... new list dis 15 %
Fisher & Norris' Double Screw Parallel ... dis 15 @ 15&5 %

Wire.
Bright and Annealed ... Nos 0 @ 18 dis 30 @ 35 %
" " ... " 19 @ 26 dis 40 @ 45 %
" " ... " 27 @ 36 dis 45 @ 50 %
Coppered ... Nos. 0 @ 18 dis 22½ @ 27½ %
Galvanized, Nos. 0 to 12 ... dis 35 @ 40 %
Galvanized, Nos. 13 to 18 ... dis 40 @ 45
Tinned ... dis 15 @ 20 %
Cast Steel ... 5 @ 10 %
Tinned Broom Wire ... dis 20 @ 25 %
Galvanized Telegraph, Nos. 8 and 9 ... ₱ ℔ 10c @ 11c
" " " 10 and 11 ... ₱ ℔ 11c @ 12c
" " " 12 ... ₱ ℔ 11½c @ 12½c
Annealed Fence, Nos. 8 and 9 ... dis 30 @ 35 %
" Grape, " 10 to 14 ... dis 30 @ 35 %
Fence Staples ... ₱ ℔ 9 @ 9½ %
Stubs' Steel Wire ... $7 00 to ℔ gold

Wrenches.
American Adjustable ... dis 45 %
Baxter's Adjustable "S" ... dis 20 %
" Diagonal ... dis 20 %
Collins & Co.'s ... new dis list 30 %
Coes Genuine ... dis 40 %
" Pattern (Wrought) ... dis 50 %
" " (Malleable) ... dis 50&10 %
Lindsay's Patent ... dis 25 %
Taft's Patent Screw ... dis 65&10 %
Davis' Patent Duplex ... new list dis 25 %

TIN WARE.

STAMPED TIN WARE.

Basins.
Wash Basins, Handled, Plain Stamped ... dis 20 %

Inch	10	11	11½
Per doz	$3·50	4·00	4·50

Wash Basins, Handled, Retinned ... dis 25 %

Inch	10	11	11½
Per doz	$4·00	4·50	5·00

Wash Basins, with Feet, Plain Stamped ... dis 20 %

Inch	10	11	11½	13½
Per doz	$2·00	2·50	2·85	3·75

Wash Basins, with Feet, Retinned ... dis 25 %

Inch	10	11	11½	13½
Per doz	$3·00	3·50	4·00	5·00

Wash Basins, Stamped ... dis 20 %

Inch	10	10½	11½
Per doz	$1·70	2·10	2·50
Inch Shallow	10	11	
Per doz	$1·55	1·80	

Wash Basins, Retinned ... dis 25 %

Inch	10	10½	11½
Per doz	$2·50	3·00	3·50
Inch Shallow	10	11	
Per doz	$2·00	2·60	

Covers.
Bucket ... net

	1 pt	1 qt.	2	3	4	6	10	12 qt.
Per gross	$1·75	2·15	3·20	3·60	4·40	5·50	7·00	10·75

Coffee Pot ... net

	3 pt.	2 qt.	3	4	6 qt.
Per gross	$ ·95	1·10	1·40	1·80	2·25

Pot ... net

Inch	7½	7¾	8½	8¾	9½	9¾	10½
Per gross	$4·10	4·50	5·15	5·65	6·25	6·60	8·25
Inch	10¾	11½	11¾	12½	12¾	13½	
Per gross	$8·85	9·60	10·20	12·25	13·50	15·00	

Tea Kettle Breasts and Covers ... net

Inch	6	6½	7	7½	8	8½	9
Per gross	$5·00	5·25	5·60	6·15	6·75	7·50	8·30
Inch	9½	10	10½	11	11½	12	13
Per gross	$8·65	11·50	12·00	12·25	13·00	17·00	18·00

Stove Pipe Collars, Tin ... net

Inch	4	4½	5	5½	6	7
Per gross	$3·40	3·65	4·40	4·80	5·35	6·85

Dipper Bowls, Plain Stamped ... dis 25 %

Pints	½	¾	1	1½	Quarts	1	2	2½
Per doz.	·50	·60	·70	·80	Per doz.	·90	1·25	1·50

Dipper Bowls, Retinned ... dis 25 %

Pints	½	¾	1	1½	Quarts	1	2	2½
Per doz.	·75	·95	1·00	1·15	Per doz.	1·30	1·55	1·90

Pans.
Dish Pans, Tinned ... dis 30 %

Quarts	7	8	10	14	17	21	30
Per doz	8·50	9·50	11·00	13·00	16·00	19·00	30·00

Milk Pans, Plain Stamped ... dis 20 %

Quarts	½	1	1½	2	3	4	5	6	8	10
Per doz	$ ·85	1·05	1·20	1·45	1·65	2·40	2·90	3·15	4·40	5·00

Milk Pans, Retinned ... dis 25 %

Quarts	½	1	1½	2	3	4	5	6	8	10
Per doz	$1·15	1·40	1·60	1·90	2·15	3·00	3·40	3·80	5·20	6·00

Pie Plates, Deep ... net

Inch	6	7	8	9	10	11	9	10
Per gross	$3·40	4·25	5·50	6·00	8·50	10·00	7·25	9·25

JAPANNED TIN WARE.

Cannisters, Common ... net

Pound	½	1	2	3
Per doz	$ ·75	1·30	1·70	2·20

Cannisters, Hinged ... net

Pound	1	1½	2	3	4	6
Per doz	$1·35	1·75	2·20	2·60	3·00	3·50

Candlesticks, Japanned ... net

No	1	2
Per gross	$6·00	5·50

Cake Boxes, Round ... net, per nest, $2·40
" Square ... net, per nest, 3·40
Dust Pans, Corrugated ... net, per gross, $18·00
Grates, Box ... net, per gross $3·20
Molasses Cups ... net

Pint	½	1	2
Per gross	$10·40	12·80	24·00

Pepper Boxes Japanned ... net
Per gross ... Small, $2·50 ; Large, $3·20
Toy Banks, House ... net

No	1	2
Per gross	$6·00	4·25

Toy Banks, Gothic ... net

No	1	2
Per gross	$5·25	3·25

Toy Cups, Straight ... net

No	1	2	3
Per gross	$3·40	2·80	2·40

Toy Cups, Flaring ... net

No	1	2
Per gross	$3·60	3·20

Toy Pails, Covered ... net

No	1	2
Per gross	$3·25	2·85

Toy Rattles ... net, per gross, $1·75
Trunks, Wire Handled ... net, per nest (5) $1·25
Spittoons, Tin ... net, per gross $22·00

PLANISHED TIN WARE.

Planished Coffee Pots, Round ... dis 20 %

Each	·60	·75	·85	·95	1·15	1·25	1·30	1·40
Pints	1	2	3	4	5	6	7	8

Planished Tea Pots, Round ... dis 20 %

Each	·70	·80	·95	1·05	1·25
Pints	2	3	4	5	6

Planished Tea Pots, Oval ... dis 20 %

Each	·70	·80	·90	1·05	1·15	1·40	1·75
Pints	1	2	3	4	5	6	8

METALS.

IRON.—Duty : Bars, 1 to 1½ cents per lb., Sheet, Band, Hoop and Scroll, 1½ to 1¾ cents per lb. Provided, that none of the above Iron shall pay a less rate of duty than 35 per cent. Pig, $7 per ton ; Polished Sheets, 3 cents per lb. ; Wrought Scrap, $8 per ton ; Cast Scrap, $6 per ton. All subject to a reduction of 10 per cent. Railroad, 70 cents per 100 lbs. Boiler and Plate, 1½ cents per lb.

Pig Iron—American.
Foundry No. 1 ... ₱ ton, $42 00 @
Foundry No. 2 ... " 34 00 @ 35 00
Gray Forge ... " 30 00 @ 32 00
White and Mottled ... "
Scotch.
Gartsherrie ... " 49 00 @ 50 00
Coltness ... " 51 00 @
Glengarnock ... " 47 00 @
Eglinton ... " 45 00 @

Bar Iron.
Am. Refined, at mill ... ₱ ℔ 3·7 @

Rails.
Welsh, gold ... ₱ ton, 62 50 @ 65 00
American, at works, currency ... " 75 00 @
Old Rails, currency ... " 46 00 @ 47 00

Scrap.
Wrought Scrap, from yard ... "

Bar Iron from Store.
Common Iron.
¾ to 2 in. round and square ... ₱ ton, $ 77 50
⅝x9-16 in " " ... " 82 50
½ in. " " ... " 85 00
2¼ to 3 in. " ... " 82 50
1 to 6 in. wide x ⅜ and 1 in. thick ... " 77 50
1¼ to 6 in wide x ¼ & 5-16 in. thick ... " 82 50
1 and 1¼ in. x ¼ and 5-16 ... " 90 00
Swedish Iron.
1¼x⅜ and ½ ... " 185 00
1¼x⅜ to ⅝, and ⅝ square ... " 180 00
1½ to 5x⅜ to ¾ and ⅞ to 2-in. square ... " 175 00
to 12x⅜ and ½ ... "
Refined Iron.
¾ to 2 in. round and square ... " 82 50
1 to 6 in. wide x ⅜ to 1 thick ... " 82 50
1¼ to 6 in. wide x ¼ and 5-16 thick ... " 87 50
1 and 1¼ x ¼ and 5-16 ... " 92 50
Large Rounds.
2⅛ to 2¾, round and square ... " 92 50
3, 3¼ and 3½ in ... " 97 50
3¾ and 4 in ... " 107 50
Rods—⅝ and 11-16, round and square ... " 87 50
½ and 9-16, " " ... " 92 50
7-16, " " ... " 95 00
⅜, " " ... " 100 00
5-16, " " ... " 105 00
¼, " " ... " 110 00
3-16, " " ... " 135 00
Band Iron.
1 to 6 in. x 3-16 to No. 12 ... " 102 50
Horse Shoe Iron.
⅝ and ¾ x ⅜, to ½ ... " } 120 00
1 x ⅜, to ⅝ ... " }
Ovals, Half Ovals and Half Rounds.
¾ to 1½ ... ₱ ton, $107 50
⅝ and 11-16 ... " 112 50
½ and 9-16 ... " 117 50
7-16 ... "
⅜ ... "
Nail Rods
Best Norway ... ₱ ℔ 9c
Norway Shapes
⅜ to 2 in. x ¼ to ⅝ ... " } 8¾c
⅜ to ¾ square ... " }
Norway Bar
¾ to 2 in. square ...
Spring Steel
1 to 4 in. wide ... " 8½c
Tire Steel
¾ to 1½ x ¼ and 5-16 ... " 9c
¾ & 1 x 3-16 ... " } 10c
¾ & 1 x ⅛ ... " }
Toe Calk Steel
½ to ¾ x ⅜ to ½ ... " 8½c
Plow Steel
6 to 16 wide ... " 9½c
Sleigh Shoe Steel
¾ to 1½ x ⅜ to ⅝ ...
Hoops, ⅝ x No. 22 ... ₱ ton, $165 00
" ¾ x No. 20 ... " 150 00
" ⅞ x No. 19 ... " 145 00
" 1 and 1⅛ x No. 18 ... " 127 50
" 1¼ to 2 and 1x1⅛ x No. 13 and 14 ... " 117 50
Scroll Iron—½ x 12 ... " 135 00
" ½ x 10 ... " 135 00
" ½ x 3-16 ... " 130 00
" ½ x ¼ ... " 125 00
" ⅝ x 14 ... " 135 00
" ⅝ x 12 ... " 122 50
" ⅝ x 10 ... " 120 00
" ⅝ x 3-16 ... " 117 50
" ⅝ x ¼ ... " 115 00
" ¾ x 12 ... " 117 50
" ¾ x 10 ... " 115 00
" ¾ x 3-16 ... " 112 50
" ¾ x ¼ ... " 110 00
" ⅞ x 14 ...
" ⅞ x 12 ... " 112 50
" ⅞ x 10 ... " 110 00
" ⅞ x 3-16 ... " 107 50
" ⅞ x ¼ ... " 105 00
" ⅞ x 14 ... " 122 50

Sheet Iron.

		Common English.	R. G. American.
Nos. 10 to 20	₱ ℔	5¾c	7c
21 to 24	"	6¼c	7¼c
25 to 26	"	6½c	7½c
27	"	7c	7¾c
28	"	7½c	8c
30	"	8c	

Galvanized, 10 to 20, prime ... ₱ ℔ 11¾c
" 21 to 24 ... " 12¾c
" 25 to 26 ... " 13¾c
" 27 ... " 14¾c
Patent Polished ... " 15c
Russia, Nos. 8 to 11 ... ₱ ℔ 22c
" Nos. 12 to 16 ... " 21c
" Stained, No. 1 ... " 20c
Belgian ... " 12½

One piece Corrugated Sheet Iron Elbows.

Charcoal Iron.

4½	5	5½	6	7 inch.
$3·75	4·25	5·25	5·25	6·90 per doz.

Russia Iron.

4½	5	5½	6	7 inch.
$8·00	10·00	13·00	13·00	14·00 doz.

Adjustable Stove Pipe Elbows.

Charcoal Iron.

4	4½	5	5½	6	7 inch.
$3·25	3·75	4·25	4·75	5·25	$6 25 per doz.

Russia Iron.

4	4½	5	5½	6	7 inch.
$7.00	8·00	9·50	10·75	11·75	13·75 per doz.

Discount on orders of 10 doz. 5 %.
" " " " 25 " 10 %.

Brass.

Rolled and in Sheets.

(Brown & Sharp's Gauge.*)

For the purchase of 100 pounds and over at one time :

High Brass.

All Nos. to No. 28, and widths 14 in. and under ... 40c
All Nos. to No. 28, inclusive, and widths over 14 to 20 in. inclusive ... 43c
Over 20 in. to 30 in. inclusive ... 46c
½c ₱ ℔ advance on each No. above No. 28 to 38, inclusive.
All Brass thinner than No. 38 is Platers' Brass at ... 50c
Sheets 24x48 in., and all sheets cut to particular sizes and lengths ... 46c
Printers' Rules ... 50c
Sheets wider than 30 in. and under 40 in ... 50c
" 40 in. and over ... 52c
Circular sheets, in diam. from 4 in. to 14 inclusive ... 50c
" " " over 14 in. to 20 " ... 53c
" " " " 20 in. to 30 " ... 56c
" " " " 30 in. to 40 " ... 59c
" " " " 40 in ... 62c

Low Brass.

4c ₱ ℔ more than High Brass.
Gilding Metals, 7c ₱ ℔ more than High Brass.
Platers' or Gold Metal { In Bars ... 52c
{ Sawed ... 56c

For Slitting : Metal in Width.
2 in. to ½ in., to No. 30, inclusive, 1c ₱ ℔ advance.
2 in. to 1 in., thinner than No. 30, 2c ₱ ℔ advance.
2 in. to ½ in., " " 30, 3c " "
½ in. and less to No. 30, 2c ₱ ℔ advance.
½ in. and less thinner than No. 30, 5c ₱ ℔ advance.
10 % discount.

Scrap—New Metal.

High Brass Scrap, 19 cents, net.
Low " 21 " "
Gilding, 23 cents, net.
Turnings, Filings and Chips, half the price of Scrap net.

Brass and Copper Wire.

(Stub's Wire Gauge).

	High Brass.	Low Brass.	Gild'g and Cop'r.
Nos. 0 to 20	43	47	54
Nos. 21, 22, 23	44	48	54
Nos. 24 and 25	45	49	55

Brass Wire straightened and cut, 4 cents advance.
10 % discount.

FINE WIRE—NET PRICES.

	High Brass.	Low Brass.	Gild'g and Cop'r.
No. 26	0·45	0·49	0·55
No. 27	0·48	0·52	0·58
No. 28	0·50	0·54	0·60
No. 29	0·52	0·56	0·62
No. 30	0·54	0·58	0·66
No. 31	0·56	0·60	0·70
No. 32	0·60	0·64	0·75
No. 33	0·64	0·68	0·85
No. 34	0·68	0·72	0·95
No. 35	0·73	0·77	1·07
No. 36	0·82	0·86	1·19
No. 37	1·02	1·02	1·32
No. 38	1·32	1·32	1·62

Ten cents per pound extra for Spooling.

TUBING.

(Brown & Sharpe's Gauge.)

	₱ ft
Plain to No. 20, inclusive	$0 58
Nos. 21, 22, 23, 2c. advance on List for each No.	
Nos. 24, 25, 26, 4c. " " "	
Above No. 26 special rates.	
Plain Tube, 1-4 inch	74
" 3-16 "	1 59
" 1-8 "	1 84

All Mandrel-Drawn Tubes 5c. advance on List.
Fancy Tubing 4c. advance on List above Plain.
English, Scotch, and Extra Patterns Fancy Tubing to No. 20.
Tubing sawed or cut 2 to 4 ft. long, 2c. advance on List.
Add to two cents a half-cent for each additional cutting under two feet. 10 % discount.
BRASS DOOR RAIL Polished—54 cents per lb.—10 %

BELT AND HOSE COPPER RIVETS AND BURS.

Price per ₱	57	58	60	62	64	66	68	72	76c
Nos.	7	8	9	10	11	12	13	14	15

Braziers Rivets, 51 cents per noun discount 10 %.

GERMAN SILVER MARKET METAL AND WIRE.

	Market Metal.	Wire
4 per cent. 12 inch. to No. 26	1·00	1·15
6 " " "	1·10	1·25
10 " " "	1·25	1·45
15 " " "	1·35	1·60
18 " " "	1·45	1·75
20 " " "	1·55	

Discount 10 %.
German Silver Sheets over 12 inches wide and weighing more than 10 lbs. $2·25 ₱ ℔ net
Advance two cents for each additional inch in width above 12 inches, and two cents per pound on each No. thinner than Nos. 26 to 36, inclusive.
All German Silver thinner than No. 36 is Platers' at 50 cents per pound additional.
German Silver Scrap, one-third less than net price of 12 inch Market Metal; German Silver Turnings, Fillings and Chips, half the price of Scrap.
* Brown & Sharp's Gauge is about two numbers finer than Stubs' Wire Gauge.

COPPER—DUTY: Pig, Bar and Ingot, 5c.; old copper, 4 cents ₱ ℔; Manufactured (including all articles of which copper is a component of chief value), 45 % ad valorem. All subject to a reduction of 10 per cent.

American Ingot	₱ ℔ 27¼ @ 27½c
English "	" "

SHEATHING, BRAZIERS' COPPER, BOLTS, &C.

Braziers Copper, ordinary sizes, over 16 oz., per square foot	40c ₱ ℔
Braziers' Copper, ordinary sizes, 16 oz. and over 12 oz., per square foot	43c. "
Braziers Copper, 12 oz. per square foot and lighter	46c. "
Circles less than 24 inch in diameter	43c. "
Circles, 24 inch diameter and over	46c. "
Segment and Pattern Sheets	43c. "
Locomotive Fire Box Sheets	40c. "
Sheathing Copper, over 12 oz. per sq. ft.	53c. "
" 12 oz. ₱ sq. ft. and lighter	46c. "
Bolt Copper	46c. "

No Copper is Sheathing except 14x48 inches, and not to exceed 34 oz. to the square foot.

TINNING.

14x48, by the case	8c. ₱ sheet
14x48, less than case	10c. "
Boiler Sizes, 7 and 8 inch	12c. "
" 9 inch	13c. "
Other sizes not larger than 30x60	2½c. ₱ sq.
Larger than 30x60	5c. "
Copper Bottoms. 40c. ₱ ℔.	

O'NEILL'S PATENT PLANISHED COPPER.

14x48.

14 and 16 oz. and heavier	44c.	By the case, 43c. ₱ ℔
12 oz. and lighter	47c.	" " 46c. "

Boiler Sizes.

7 in., 14x52. 8 in., 4x56. 9 in., 14x60

14 and 16 oz. and heavier	46c.	By the case, 45c. ₱ ℔

(And all sizes not over 30 inches wide.)

30x60

14 and 16 oz. and heavier	53c. ₱ ℔
12 oz.	51c. "

LEAD—DUTY: Pig, $2 per 100 lbs.; old Lead, 1½ cent per lb.; Pipe and Sheet, 2½ cents per lb. All subject to a reduction of 10 per cent.

Spanish	@ 6¾c gold
German Refined	@ 6¾c gold
English	@ 7¼c gold
Bar	dis 10 % 9¾c.
Pipe	dis 10 % 10½c.
Tin Lined Pipe	dis 10 % 16½c.
Sheet	dis 10 % 10½c.
Shot	dis 10 %, Drop, 11½c.; Buck., 12¼c.
Solder No. 1, 21c. @ 22c. No. 2, 20c. @ 20½c.	

STEEL—DUTY: Bars, Ingots, Sheets and Coils, valued at 7 cents per lb., or under, 2½ cents; over 7 cents, and not above 11, 3 cents per lb.; over 11, 3½ cents per lb. and 10 % ad val. Railway Bars 1½ cents per lb. Railway Bars, in part Steel, 1 cent per lb. All subject to a reduction of 10 per cent. Provided, that Metal cemented, cast or made from Iron by the Bessemer or pneumatic process, of whatever form or description, shall be classed as Steel.

American Cast Steel.

Tool	17c
Spring	18½c
Homogeneous	13½c
Tire	12½ @ 13½c
Machinery (round and square)	11½ @ 12c
File	12½c
Sheet	14 @ 16c
Saw Plate, mill and mulay	14 @ 16½c
Saw Plate, gang and X cut	13 @ 14c
circular as to size	18 @ 30c

Chrome Steel.

Tool	₱ ℔ 20 @ 21c
Tool, extra fine	" 40 @ 75c
Spring	₱ ℔ 12c and upward
Machinery	₱ ℔ 14c.
Hammer	" 15c.
Gun or Homogeneous	" 16c.

English Steel,—payable in gold, dis 5 % cash.

Best Cast	₱ ℔ 19½c
Extra Cast	" 20½c
Round Machinery, Cast	" 12½c
Swaged, Cast	" 21½c
Best Double Shear	" 19½c
Blister, 1st quality	" 15½c
" 2d quality	" 13½c
" 3d quality	" 11½c
German Steel, Best	" 12½c
do Eagle	" 11½c
do 3d quality	" 10½c
Sheet Cast Steel, 1st quality	" 19½c
" 2d quality	" 17½c

SPELTER—DUTY: In Pigs, Bars and Plates, $1 50 per 100 lbs.—less 10 per cent.

Silesian, cash	7¾ @ 7¾c., gold
American "	8 @ 11c., currency

TIN—DUTY: Plates, Sheets, Tagger and Terne, 15 per cent. ad val.; Electro-galvanized Plates, 2 cents per ℔; Manufactures of, not enumerated, 35 per cent. ad val. —all subject to a reduction of 10 per cent. Bars, Banca or Block, and Pigs, free.

Banca	₱ ℔ 35c., gold
Straits	₱ ℔ 32c., gold
English	₱ ℔ 29½ @ 30c., gold

CHARCOAL TIN PLATE.

I C 10x14, Prime Charcoal	13·00
12x12, "	13·50
14x20, "	14·00
I X 10x14, "	15·25
12x12, "	15·75
14x20, "	16·25
For each additional X add	2·25

COKE TIN PLATE.

	Best.	2d Quality.	Ordinary
I C 10x14	$12·50	$11·50	9·50 @ $10·50
I C 12x12	13·00	12·00	
I C 14x20	15·25	12·25	

TERNE PLATE.

	Prime Char.	2d qual.	Coke.
I C 14x20	$12·00	11·25 @ 11·50	9·25 @ 11·25
I X 14x20	14·00		

ZINC.—DUTY: Pig or Block, $1 50 per 100 lbs. Sheet, 2½c. ₱ ℔. All subject to a reduction of 10 per cent.

Sheet	cask 10½c
"	open 11c

Paper Stock, Old Metals, &c.

(*Dealers' Selling Prices.*)

Canvas linen	6 @ 6¼
" cotton, No. 1	7 @ 7¼
" " No. 2	4
White linen rags, No. 1	7 @ 7¾
" " No. 2	4¾ @ 5
Colored	3 @ 3½
Mixed woolens	2 @ 3
Soft woolens	6¾ @ 7
Gunny bagging	1¾ @ 1¾
Jute Butts	1¾ @ 2
Kentucky bagging	3½ @ 3¾
Book stock	4¼ @ 4¾
Waste paper and scraps	2½ @ 3
Rope cuttings	1¾ @ 3
Kentucky Bale rope	4 @ 4¼
Oakum junk, No. 1	5¼ @ 5½
" No. 2	4¼ @ 4¾
Grass rope	4¼ @ 4¾
Tarred Shaking	1¾ @ 2

Old Metal.

Copper	24 @ 25
Yellow metal	18 @
Brass	18 @ 20
Heavy Composition	21 @ 23
Old lead, solid	6½ @ 7
Tea lead	6
Wrought iron	1¾ @ 1¾
Sheet iron	1 @
Cast iron	1 @ 1¼
Machinery iron	1¾ @ 1¾
Zinc	6
Pewter, No. 1	26 @ 27
" No. 2	10 @ 12
Spelter	7

Paints, Oils, etc.

Paints.

Black, lamp—Coach Painters	₱ ℔ 20c
" " Ordinary	6c
" Ivory Drop, fair	15c
" " best	26c
Black Paint, in oil kegs, 8c.; asst'd cans, 11 c	
Blue, Prussian, fair to best	50 @ 75c
" " in oil	35 @ 65c
" Chinese, dry	33c
" Ultramarife	25 @ 30c
Brown, Spanish	1¼c
" Van Dyke	9c
Carmine, 40	$12 00
Green, Chrome	15 @ 23c
" " in oil	18 @ 25c
" Paris good, 30c; best, 40c	
" " in oil " 30c; " 45c	
Mineral Paints	1¼ @ 4c
Orange Mineral	14½c
Red Lead, American	9¼c
" English	10½c
" Venetian (N. C.) dry	2¾c
" " in oil asst'd cans, 11c; kegs, 8½c	
" Indian, dry	10c
Rose Pink	13c
Sienna, American, Raw	4c
" Burnt	5½c
" " in oil	16 @ 26c
" Raw "	15 @ 25c
Umber, Burnt	4 @ 8c
" " in oil	16 @ 21c
" Raw	3½ @ 7½c
" " in oil	16 @ 22c
Vermillion, Chinese	$1 45
" English	1 40
" Trieste	1 38
" American, Common	23c
White Lead, American, pure dry	11½c
" " " in oil	12 c
White, Paris, English, prime in bbls. 2½ @ 2¾c	
Yellow Ochre French	2½ @ 2¾c
" " in oil asst'd cans, 11c; kegs, 8½c	
" Vermont In casks 1½c	
" Chrome	17 @ 21c
" " in oil	18 @ 22c
Zinc White, American No. 1 dry	9c
" " 1, in oil	11c
" French (Paris)	11 c
" " in oil	12 c

Oils.

Linseed Raw ₱ gal. casks, 98c; bbls. 99c	
" Boiled " $1·02 " $1·04	
Whale, Crude	"
" Bleached Winter	"
Sperm, Crude	"
" Winter unbleached	"
" " Bleached	" 1·80
Seal, Extra Refined	" 87½c
Lard, Pure Winter	90c
" Spring	76c
Cotton Seed, Crude	55c
" Southern Yellow	65c
" White	75c
Neatsfoot, Winter $1·10 @ $1·35	
Natural Lubricating bbls, 45c	

Sundries.

Asphaltum	9c
Benzine ₱ gal. 16c	
Chalk	1½c
" Block	2c
Dryer, Patent, Am'n asst'd cans, 10½c.; kegs, 9c	
" English " 11c.; " 9c	
Flocks	5c
Frostings	50c
Glue, White	33 @ 47c
" Sheet	30c
Glaziers' Points, Zinc	9c
Gum, Copal	36c
" Damar	25c
" Shellac, English	46c
" " dark	46c
Litmarge	10c
Pumice Stone, selected Lumps	4 @ 6c
" powdered	4c
Putty in bladders	3½c
" in bulk	3c
Rotton Stone, soft, English	8c
Spirits Turpentine	4c
Whiting, Spanish	1½c

Glass.

French Window—1st, 2d, 3d, and 4th qualities. Per box of 50 feet.

SINGLE.

SIZES.	I.	II.	III.	IV.
6 x 8 to 7 x 9	$8·00	$7·00	$6·75	$6·00
8 x 10 to 10 x 14	8·50	8·00	7·25	6·50
10 x 15 to 12 x 16	9·00	8·50	8·00	6·75
13 x 16 to 16 x 20	9·50	9·00	8·50	7·75
15 x 22 to 15 x 30	11·75	10·50	10·00	8·00
16 x 20 to 22 x 30	14·25	12·25	11·00	9·50
15 x 38 to 22 x 36	15·00	13·50	12·00	
24 x 36 to 24 x 40	15·75	14·25	12·50	
28 x 38 to 28 x 42	16·25	14·75	13·25	
28 x 44 to 28 x 50	17·25	15·75	14·25	
30 x 50 to 30 x 54	20·50	17·00	15·50	
32 x 54 to 34 x 56	21·50	19·25	17·50	
34 x 58 to 34 x 60	23·00	21·50	20·25	
36 x 60 to 40 x 60	26·50	24·25	23·00	

DOUBLE.

SIZES.	I.	II.	III.	IV.
6 x 8 to 7 x 9	$13·00	$12·00	$11·50	$10·00
8 x 10 to 10 x 14	14·00	12·75	12·00	10·75
10 x 15 to 12 x 16	15·00	14·00	13·25	11·25
13 x 16 to 16 x 20	16·00	15·00	14·00	12·50
15 x 22 to 15 x 30	20·00	17·50	16·50	13·25
16 x 30 to 22 x 30	22·00	19·25	17·75	15·00
15 x 38 to 22 x 36	23·75	20·50	19·25	
24 x 36 to 24 x 40	24·75	22·50	20·00	
28 x 38 to 28 x 42	26·00	23·50	21·00	
28 x 44 to 28 x 50	27·50	25·50	23·50	
30 x 50 to 30 x 54	31·00	26·50	24·00	
32 x 54 to 34 x 56	32·50	29·00	26·50	
34 x 58 to 34 x 60	34·50	33·00	31·00	
36 x 60 to 40 x 60	39·50	36·50	35·00	

Sizes above—$12·00 per box extra for every 5 inches. Discount to the trade 50 per cent.
An additional 10 per cent. will be charged for all Glass more than 40 inches wide. All sizes above 32 inches in length, and not making more than 81 united inches, will be charged in the 84 united inches bracket.

FOREIGN.

GREAT BRITAIN.

Messrs. J. Berger Spence & Co., London, Glasgow and Manchester, under date of Sept. 20, 1873, report:

Metals.—The orders consequent on the approaching close of the fall shipping season are keeping manufacturers fairly active, and the works generally are fully occupied, although their productive powers are not unduly pressed, as sometimes happens at this time of the year. A slight decline has taken place in the value of Scotch Pig Iron warrants. The shipments for the past week amounted to 11,477 tons, against 14,129 tons in the corresponding week of last year. Middlesborough Pig Iron is without alteration. In Manufactured Iron the great event of the week has been the notification that American made Bars of a quality equal to Staffordshire "Crown" had been bought, delivered free in Liverpool, at £11. 10/ per ton; it appears, however, that although the sale was made, the American manufacturers are unable or unwilling to fulfil their engagement, and the matter is now in abeyance, and in the opinion of many of our most practical men is likely to remain so, as they consider it impossible for American Iron to be produced with any profit at the above price, and improbable that our Yankee friends would send it here unless tangible results were returnable. There is not quite so much doing in Copper, but the returns of this metal are all favorable to an advancing price. The stocks of Chili Bars, etc., in Liverpool and Swansea, are estimated as about equal to 21,500 tons fine Copper. Tin is quiet. Lead is very firm, and higher rates are anticipated. A lull has taken place in the demand for Spelter, which is slightly lower in value.

IRON—"Ayresome" Yorkshire Pig Iron, No. 1, 107/6; No. 2, 102/6; No. 3, 100/; No. 4, (Foundry), 98/6; No. 4 (Forge), 97/6 net cash, or 2/ extra 4 months' bills. Scotch Pig, warrants, 114/ to 115/. Staffordshire Bars, £12. 10/ to £14. Hoop Iron, £13. 10/ to £14. Gas Tubes, 47½ per cent. off new list. Boiler Tubes, 17½ per cent. discount.

COPPER.—English Tough Ingot, £92 to £95. Chili Bars, £85 to £86.

TIN.—English Ingot, £128 to £130. Straits, £126 to £127.

TIN PLATES.—Best Coke, I. C., 34/ to 39/; Charcoal, I. C., 40/ to 44/ per box.

LEAD.—Best English Soft Pig, £23. 10/ to £24. Refined Red Lead, £25 to £27.

ANTIMONY.—French Star, £59 to £60.

SPELTER.—Silesian Special Brands, £27 to £27. 10/. English, Best Brands, £27. 10/ to £28..

GERMANY.

(*Borsenblatt.*)

BERLIN, Sept. 11, 1873.—*Iron*—Little doing in Pig, most of the foundries being well stocked, and prices are rather in favor of buyers. Good and best brands of Scotch, 74 to 76; English, 64 to 68 silbergroschen. Rails for rolling purposes are offered at 2⅝ to 2¼ thalers; Rolling Iron, 4⅛; Boiler Sheet Iron, 6⅛ to 6¼; thin Sheets, 7⅛ to 7¾ the 50 kilos in large lots. *Copper*—Firm; good sorts English and Chili, 30½ to 31⅛, and above. *Tin* unaltered; Banca, 46 to 46⅛ thalers, and prime Lamb, 44¾ to 45, and higher. *Spelter* firm; W. H. Giesche's Heirs, in large lots, 9⅛ to 9¼ thalers; Lower Silesian, ⅛ to ¾ cheaper. *Lead* stiff; Tarnowitz, Hartz and Saxonian, 8⅛ to 8½, and better in some cases.

(*Borsen Zeitung.*)

BERLIN, Sept. 16, 1873.—*Iron*—The annual export of Iron from England to the United States, according to the London *Times*, has decreased 230,000 tons, and, aside from this, the latter country has become a dangerous competitor against European Iron manufactures everywhere. The question has arisen, therefore, where England is to sell its excess of production, and as English Iron will get duty free into Germany after the 1st proximo, the former country will forward to us its surplus. But then France and Belgium have the same intention, and the consequence will be that Iron industry in the Rhenish Provinces will be seriously affected by being flooded with Iron from all quarters.

(*Borsenhalle.*)

HAMBURG, Sept. 12, 1873.—*Lead* remains quiet, but firm. German, 25 to 26 marks; English, 26·30 to 26·50; no Spanish here. *Copper* is bought in small quantities only, for consumption. Northern sorts, 96 to 105. *Tin*—Nearly without any large transactions. Banca at 1·50; English at 1·45; Rods, 1·42½ to 1·45. *Spelter*—Inanimate at 27 to 27½.

(*Frankfort Zeitung.*)

CLAUSTHAL (Hartz Mountains), Sept. 16, 1873.—The lack of hands to work the mines is such that at the Knesbeck shaft, near Grund, work has been stopped for a year past, and that the Wohlfahrt shaft here has but one-half its usual force. Nor is there the least prospect of a speedy supply of miners. There is plenty of ore, but it has become more profitable to import South American ore by Hamburg vessels and steamers. These ores are cast aside in that part of the world as useless. On being worked here they yield better results than the domestic ores, a cwt. of the former yielding from 4 to 5 pounds silver, while a like quantity of Hartz ore nets but 2 pounds. The inoperative shafts are all silver mines.

BELGIUM.

(*Cote Libre.*)

CHARLEROI, Sept. 14, 1873.—Quite a stock of *Cast Iron* is still to be met with in store, high priced, and which owners are now anxious to rid themselves of. The faintly insisted upon asking price of 11¼ francs suddenly broke down the moment a large sale had been made at 11, declining finally to 10¾. A good many new offer it at this rate. A great demand exists for rails, with a contract of 15,000 tons for Switzerland at 26½ francs. *Coal* as lively as ever. Orders are dropping in uninterruptedly from all quarters. Prices are firm, with an upward tendency.

HOLLAND.

(*Wm. Brummer, Schroder & Co.*)

ROTTERDAM, Sept. 16, 1873.—*Tin*—The market is quiet and but few dealings have taken place of Banca at 78¾ guilders on the spot, and deliverable from the impending sale at 78 to 78½.

Sept. 25.—Telegraphic.—In consequence of financial troubles at New York, the government auction sale of 30,000 slabs Banca went as low as 75 guilders. Singapore simultaneously cables tin, $34¼ per picul.

FRANCE.

(*Le Commerce.*)

PARIS, Sept. 18, 1873.—*Iron and Steel.*—Pig and cast iron production of France during the first six months of 1873, 660,668 tons; increase over 1872, 93,134 tons. Wrought iron production, 464,411 tons; increase, 20,319. Steel production, 82,653 tons; increase, 20,000 tons. The same inactivity reigns and fresh orders are not received; yet prices are tolerably well sustained, more animation being expected next month, when rails, etc. will be more extensively bought by the various companies. They have made some purchases already at 327 to 330 francs for rails. Prices in the Champagne are upheld; at Besancon the masters of forges have lowered prices unanimously 10 francs.

(*Moniteur des Interets Materiels.*)

PARIS, September 14, 1873.—*Copper* has been active in England, but the dealings have been more exclusively speculative, wrong statistics telegraphed from Valparaiso assisting (since discovered to have been intentionally manipulated). Lower prices are expected from Chili. Paris has also slightly improved under the influence of the bogus excitement in England, without much doing. Havre has been stagnant and uninfluenced. Marseilles is quiet, but well sustained. Germany has been looking up. *Tin* has been flat in Holland, mainly due to the enormous quantities of ore now being mined in Australia. Operators are afraid of the future effects of Australian tin imports on prices in England. London has been quiet, and then declined. Paris is quiet, without dealings. Havre and Marseilles the same. Banca at Stettin (Prussia), 48 thalers; English, 45 to 46. Hong Kong, per cable, is more active. All *Lead* markets firm. London improving 5/ per ton. England will get into serious embarrassment if the political chaos in Spain continues for some time longer and British consumption has to draw its requirements more exclusively from the domestic supply. Paris is rising, though not over-active. At Havre 170 tons Spanish sold at 56 francs the 100 kilos. Marseilles improves, the import from Spain during the fortnight amounting to a mere trifle. Stettin is 8 to 8¾. *Spelter* is once more dealt in more extensively, especially in England, and no wonder, stocks at London, Hull and Grimsby being down to 748 tons, against 3117 and 5587 the previous two seasons. Paris has improved materially. Silesian being 72 at Havre, other brands 68 to 69. Marseilles rising, with light dealings. Breslau (Prussia) firm at 8¼ to 8¾. *Tin Plates* are looking up at London, but the demand does not yet warrant any very great improvement.

(*Le Commerce.*)

PARIS, Sept. 18, 1873.—*Coal.*—The weather is getting cooler on the Continent, and people begin to lay in their winter supplies; for the moment the struggle between producers and consumers will consequently incline in favor of the former. In England the Continental demand has, beside, already produced a slight improvement. This movement is, however, but temporary. The Belgian government has declined the tenders for 20,000 tons for the State railways, thus tacitly implying that it has the means at hand to get what is wanted cheaper than at Charleroi and the central districts. The Prefect of the Pas-de-Calais has set a good example to all the remaining coal departments of France, in notifying the Ferque mines that their charter will be forfeited unless they recommence operations within two months from date. If anything, a similar series of measures will set all the now speculating companies at work once more, and the coal question in France will be solved without difficulty.

EAST INDIES.

(*Sandilands, Buttery & Co.*)

PENANG, Aug. 11, 1873.—*Tin* has been in moderate request during the fortnight, yet closing rates show an advance. Supplies have been light, and the bulk of transactions has been effected at $33·40 to $33·50 per picul, at which latter rate the market closes very firm. Purchases for the United States 1180 piculs, for other countries, 2200. Stock in bazar, in first hands, 1000 piculs. *Exchange*, 44/4½ to 4/5.

AFRICA.

(*Alexander Duff & Co.*)

PORT LOUIS (Mauritius) Aug. 21, 1873.—*Galvanized Iron* is steady at $15·65 the 100 pounds. The stock of *Tin Plates* is exhausted; we quote the same nominally, $13·75. *Coals* are quiet at $14 to $14½ per ton, English; and $10 to $10½, nominally, Australian; of the latter none left. *Patent Fuel*, $15¾ to $16. *Fire Bricks* are very scarce at $72½ to $75 per 1000. *Exchange.*—The Bank drawing rate for this mail is 4 per cent. premium.

The Iron Age Directory

and Index to Advertisements.

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Manufacturers of

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PLATE AND HOOK HINGES,

Cold Pressed Nuts and Washers, Felloe Clips, &c

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MANUFACTURERS OF

Saws, Files, Edge Tools and Steel.

JOHN L. FISHER. Agent,

116 Duane Street, NEW YORK.

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MANUFACTURERS OF

Wrought Butts, Strap and T Hinges.
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LIEGE (Belgium), Represented by Mr. LOUIS MULLER.

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Sole Agents for **LAMSON & GOODNOW MFG. CO., Shelburne Falls, Mass.**—Table Cutlery and Butcher Knives.
W. & S. Butcher's Files, Edge Tools and Razors, the largest stock in the United States.
Geo. Wostenholm & Son's Knives, Scissors and Razors, the largest stock in the U. S.
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BUTCHERS' STEELS,
AND
SHOE KNIVES.

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IN THE

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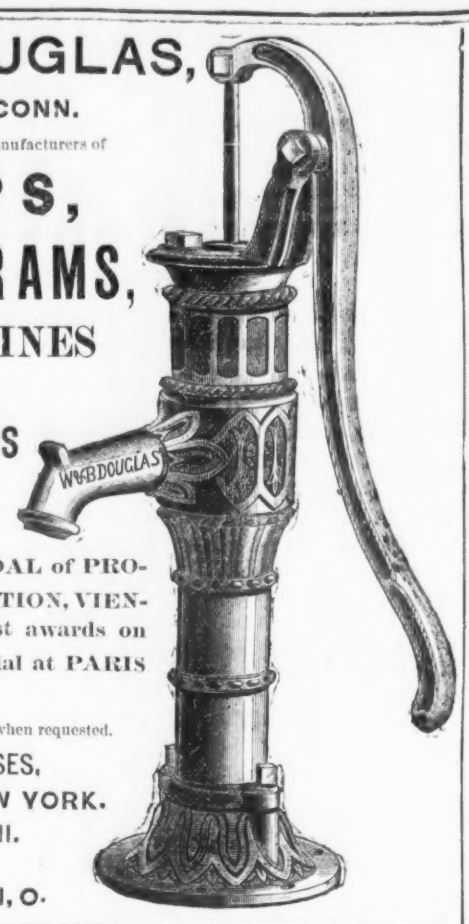

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AND
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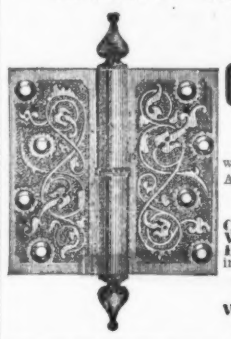
UNION MANUFACTURING COMPANY,



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Drilled and Wire Jointed.
Japanned, Figured Enameled, Nickle Plated, with and without Cap, and Real Bronze Butts.
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IRON AND BRASS PUMPS,

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Pumps, Steam Pumps, Rotary Pumps, Centrifugal Pumps, Piston Pumps,

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Levels, Hand and Bench Screws, etc., etc.

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WOODWARD STEAM PUMP MFG. CO.

Steam Pump and Fire Engine,

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Steam, Water and Gas Fitting of all kinds.

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Double Acting,

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STEAM PUMPS.

ALWAYS RELIABLE

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The Hubbard & Curtiss Mfg. Co.,

No 82 Chambers St., N. Y., Manufacturers of

Our New Patent Improved Self-Tightening Drill Chuck, Victor No. 3.

The cut at the right shows the extra set of jaws which we furnish when ordered, at $2·00.
They can be used for chucking small articles for turning, boring, &c., from 0 to 1⅛.
The jaws can be changed in three minutes.

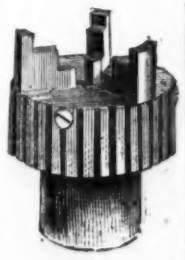
The best Chuck in the Market!

☞ All its parts are of Cast Steel. Warranted to hold ⅛ to 0 drills with the clasp of the hand.

Price - - - - - - $8·00.
Extra Jaws - - - - - - 2·00.

No. 4 VICTOR CHUCK, same principle as No. 3, will hold drills from ¾ shank down to ⅛ inch.

Price - - - - - - $10·00.
Extra Jaws - - - - - - 2·50.



Also, manufacturers of our

UNIVERSAL DRILL CHUCKS, No. 1 and 2,

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Fine Tools & Hardware Specialties

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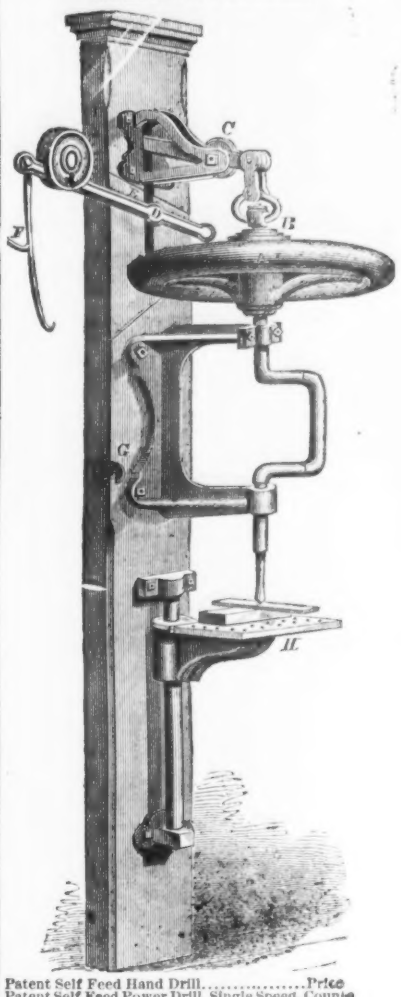

Patent Self Feed Hand Drill.....Price
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Patent Self Feed Power Drill, Three Speeds, Counter Shaft and Pulleys complete.....Price,
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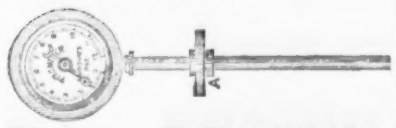
for BLAST FURNACES.

E. BROWN'S STANDARD PORTABLE,
E. Brown's Improved
Gauntlet



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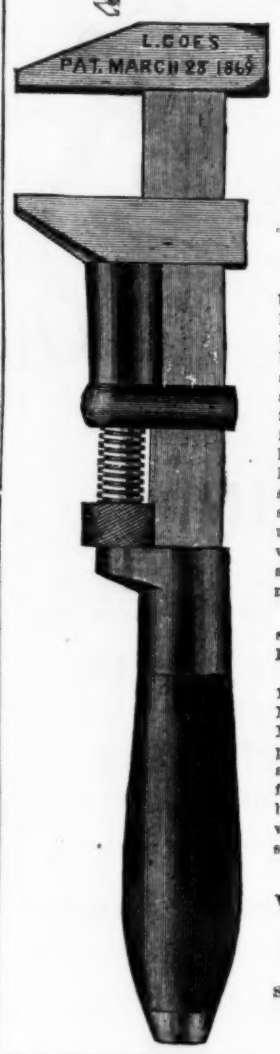

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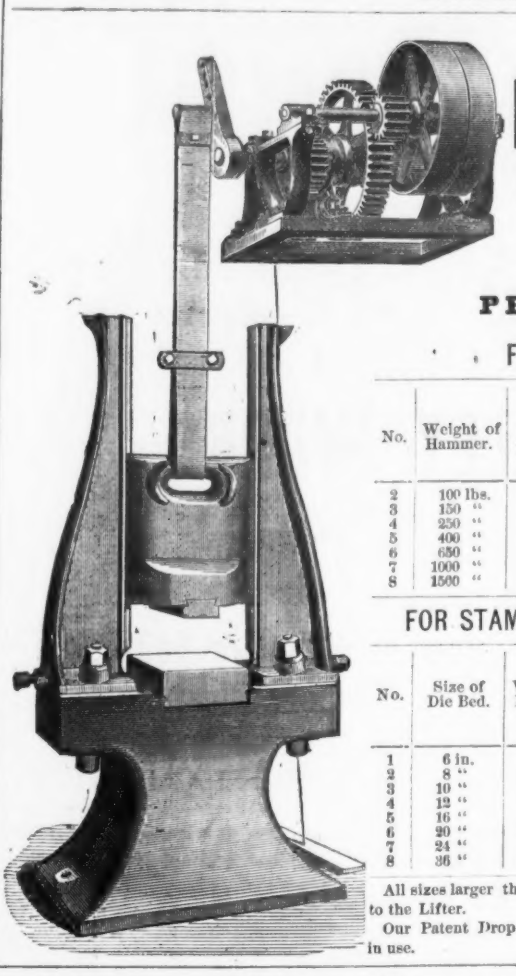

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MILO PECK & CO.
SOLE MANUFACTURERS.
NEW HAVEN, CONN

PRICE LIST.

FOR FORGING.

No.	Weight of Hammer.	Distance between Uprights.	Lift of Hammer.	Price Complete.
2	100 lbs.	8 in.	24 in.	$ 330 00
3	150 "	10 "	30 "	467 00
4	250 "	12 "	30 "	750 00
5	400 "	16 "	30 "	900 00
6	650 "	16 "	30 "	1300 00
7	1000 "	16 "	30 "	1800 00
8	1500 "	16 "	30 "	2500 00

FOR STAMPING SHEET METALS.

No.	Size of Die Bed.	Weight of Hammer.	Price of Drop without Lifter.	Price of Lifter.
1	6 in.	50 lbs.	$ 127 50	$ 82 50
2	8 "	100 "	212 50	137 50
3	10 "	150 "	300 00	220 00
4	12 "	250 "	400 00	340 00
5	16 "	400 "	550 00	430 00
6	20 "	650 "	750 00	520 00
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All sizes larger than No. 3 have Wrought Iron Cranks to the Lifter.
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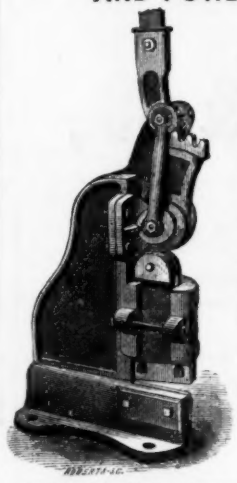

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Flat Bar Hand Shear, cuts ¼x1-16 to 2x⅜.....Price, 7 to 45
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Hand Punch Press, punches ⅛x⅛ to ½x½ ....Price, 25 to 200
Combined Hand Punch and Round and Flat Bar Shear, punches 1-16x1-16 to ¾x⅜, cuts round iron ⅛ to ¾, cuts flat bar 2x⅜ and under.....Price, 15 to 160
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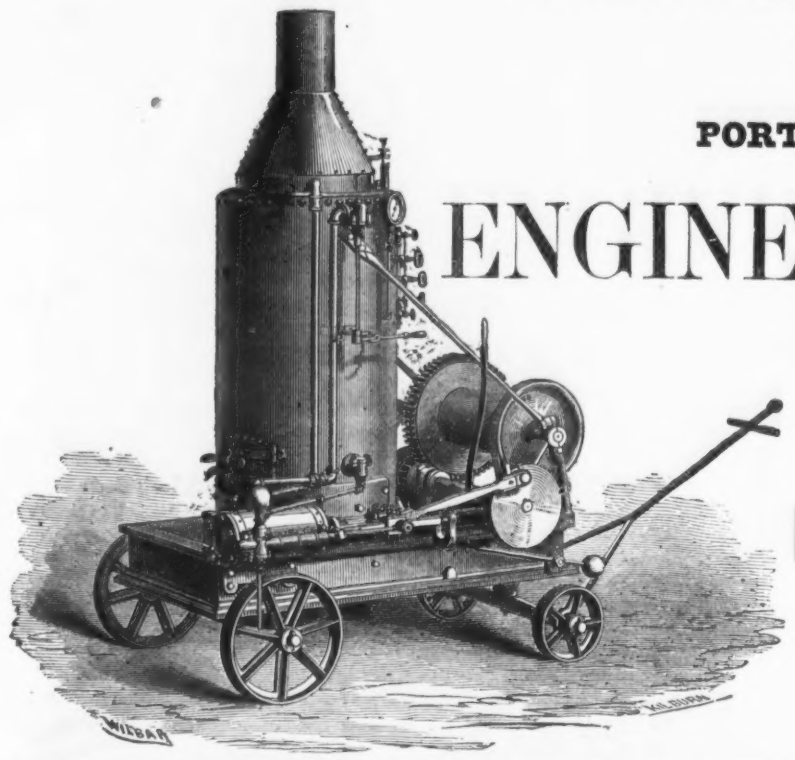

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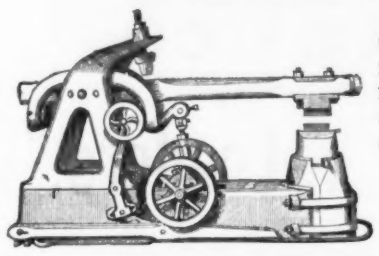

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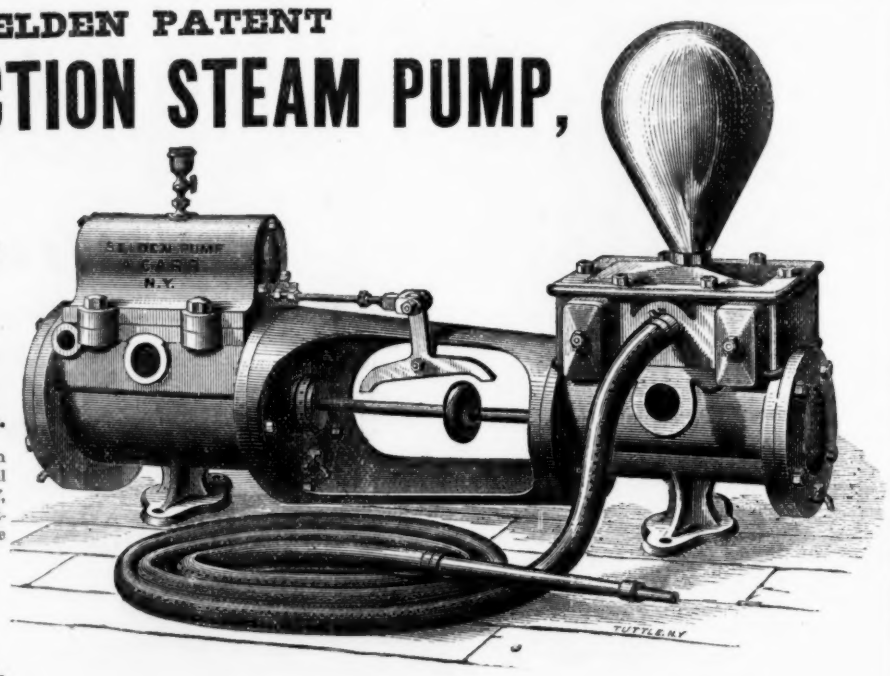

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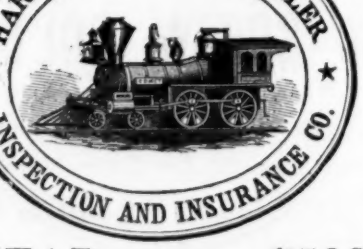

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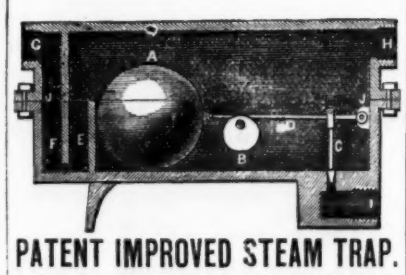

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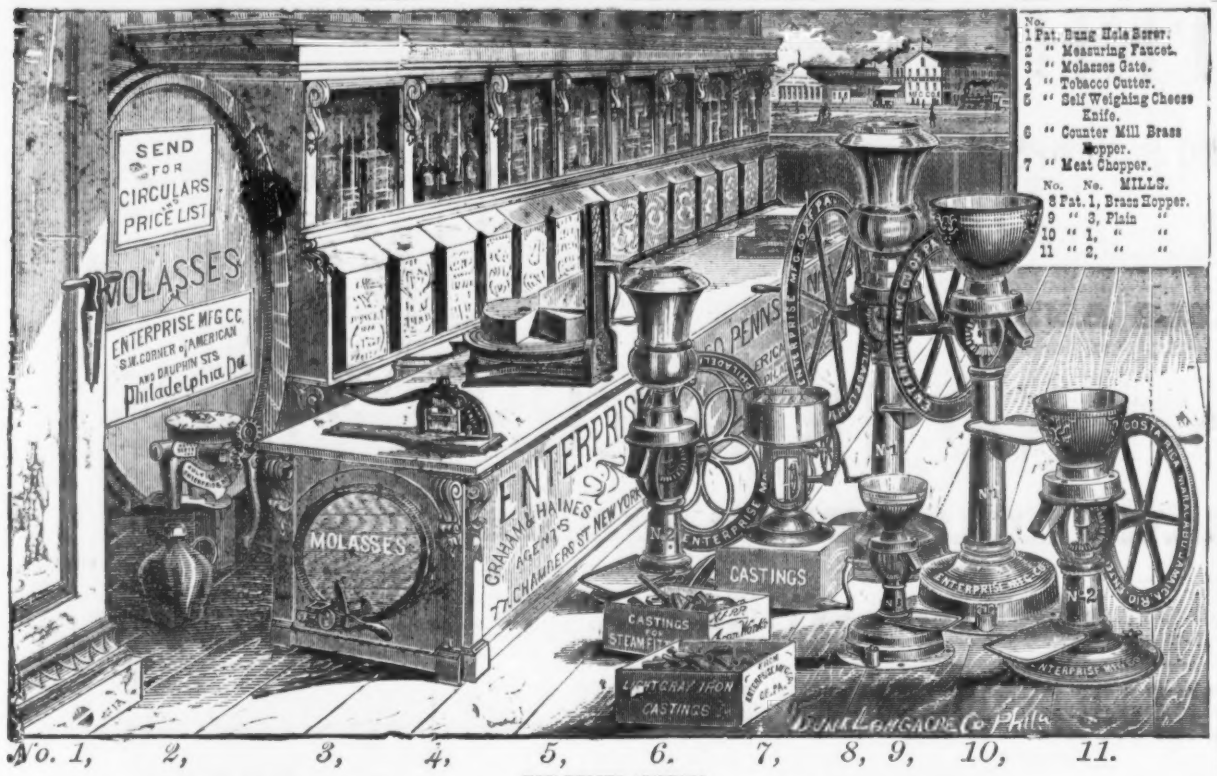

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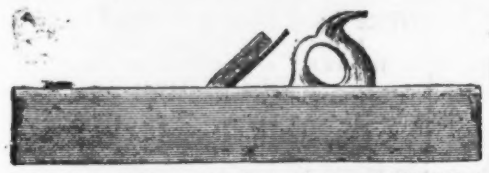

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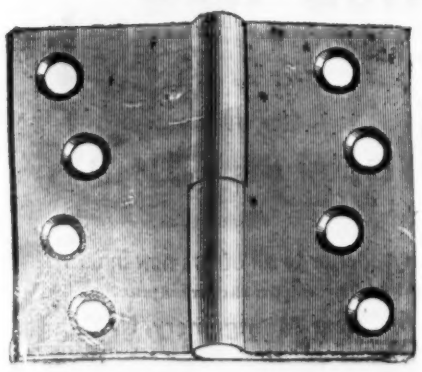

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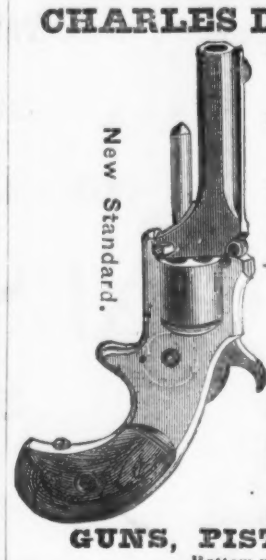

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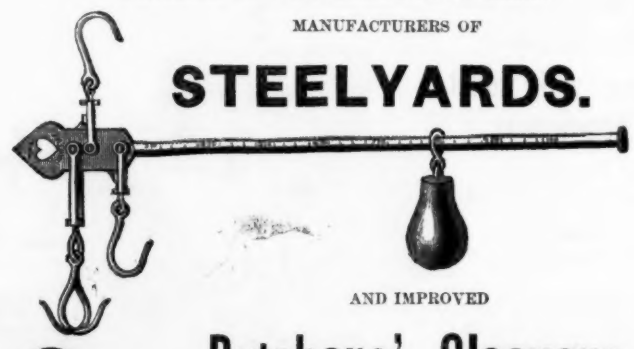

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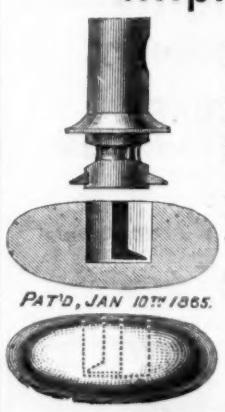

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Hunt's Light..... " 14 00 @ 14 50
Red Indian, all sizes..... " 12 50 @ 12 00
Red Chieftain, all sizes..... " 12 30 @ 13 00
Crown Prince..... " 13 50 @ 13 00
Augers and Auger Bits.—Pierce's Pat.
Twist Bits.....dis 25 %
Bates' & Ives' Bits.....dis 25 @ 30 %
Douglass' Bits.....dis 25 @ 30 %
Cook's Bits.....dis30 @ 30&10 %
Bonney's Pat. Hollow Augers.....dis 25 %
Russell Jennings' Bits.....dis 10 %
Bates' & Ives Nut Augers.....dis 20&10 %
Douglass Nut Augers.....dis 30 %
Watrous' Ship Augers.....dis 10 %
Balances.—Landers, Frary & Clark's.....dis 10 @ 15 %
Chatillon's.....dis 10 @ 15 %
Morton's.....dis 10 @ 15 %
Common Spring, with Hook.....₱ doz $1 38 @ 2 00
Bells.—Bevin Bros. Mfg. Co. Hand Bells.....dis 50&10 %
" Extra Light Hand Bells.....dis 60 %
Other makers light.....dis 55 @ 60 %
Connell's Door Bells.....old list net
Western and Kentucky.....dis 50 %
Boring Machines.—Bates' Mfg. Co., complete with augers.....dis 10 @ 15 %
Douglas' Mfg. Co., complete with augers..dis 10 @ 15 %
Common Augers.....$4 25 @ 4 00
Anguar, Extra Auger..... 5 50 @ 5 00
Bolts.—Eastern Carriage Bolts.....dis 70 %
Western " " .....dis 70 %
Philadelphia " " .....dis 40&5 %
Wrought Shutter Bolts.....dis 45 %
Cast " " .....dis 35 %
Braces.—Barber's.....dis 40 %
Bartholomew's.....dis 10 @ 15 %
Spofford.....dis 37½ %
Butts.—Cast Fast Joint, Narrow.....dis 40 %
" " Broad.....dis 40 %
Cast Loose Joint.....dis 50 %
" Acorn Drilled.....dis 40 %
Wrought Loose Pin.....dis 30&5 %
" Table Hinges and Back Flaps.....dis 25&5 %
" Narrow.....dis 30&5 %
" Loose Joint.....dis 35&5 %
Parker's Blind Butts.....dis 40 %; by the case, dis 40&10 %
Shepard's " " .....
Clark's " " .....
Garretson's " .....dis 45 %; by the case, dis 50 %
Lull & Porter's " .....dis 25&10 %
Chains.—German Halter.....gold list dis 20 @ 25 %
" Coil.....gold list dis 20 @ 25 %
Galvanized Pump.....₱ ℔ 15c
Best Proof Coil Chain—

₱ ℔.....	13¾	10¾	10	9½	9¼	9	8¾c gold
	3-16	¼	5-16	⅜	7-16	½	⅝ in.

By the cask, 560 lbs., discount ½c per lb. Common Chain, ½c per lb. less than proof.
Chisels.—Socket Framing.....dis 60 @ 60&5 %
Socket Firmer.....dis 60 @ 60&5 %
" Tang.....dis 40 @ 40&5 %
Beaty's Framing and Firmer.....dis 10 @ 10&5 %
Casters.—Porcelain Wheel.....dis 30&10 %
Iron.....dis 30&10 %
Brass.....dis 30&10 %
Clothes Wringers.—Universal..... per doz $72 00
Novelty..... " 72 00
Reliance..... " 72 00
Providence..... " 72 00
Orders for 5 dozen, discount $3 per dozen.
King Wringers (Iron Frame).....per doz $68 00
Coffee Mills.—Common Box and Side.....dis 10 @ 15 %
Patent Box and Side.....dis 10 @ 15 %
Cutlery.—American Pocket (best).....dis 20 @ 25 %
Landers, Frary & Clark, J. Russell & Co. and Lamson & Goodnow Mfg. Co. Manufacturers' net prices.
Drawing Knives.—Hart Mfg. Co.'s....dis 60 @ 60&5 %
Concave Adjustable Handle.....dis 10 %
Beaty.....dis 10 %
Files.—Nicholson Mill Files.....new list, $5 00 to £ cur
Nicholson Bastard..... " 5 00 to £ cur
" Taper..... " 5 00 to £ cur
Butcher's Mill.....$5 75 to £ gold.
" Bastard..... 5 50 to £ gold
" Taper..... 5 50 to £ gold
Moss & Gamble—Mill, Taper and Bastard.....5 50 @ 5 25 to £ gold
Fluting Machines.
Royal, No. 1, 4½ inch Rollers.....list $6 00
" No. 2, 6 " " .....list 7 00
Hammers and Hatchets.
Yerkes & Plumb's.....dis 10 %
Hammond & Son's.....dis 5 %
Beatty's.....dis 10 %
Hinges.—Strap and T.....dis 30&7½ %
Bonney's No. 1 Gate.....dis 25 %
" No. 2 and 3.....dis 35 %

Horse Nails.	Nos.	6	7	8	9	10
Ausable		27	25	24	23	22
Globe		29	26	25	24	23
Brundage		26	24	23	22	21
	Nos.	5	6	7	8	9	10
Putnam		32	28	26	25	24	23

On Ausable, Globe and Brundage 1000 ℔ lots.....dis 5 %
Knobs.—Door (regular manufacture).....dis 40 %
Porcelain and Mineral.....dis 40 %
Locks and Latches.—Rim and Mortise.....dis 40 %
Till and Cupboard.....dis 25 %
American Padlocks.....dis 40 %
Trunk Locks.....dis 5 @ 10 %
Thumb and Riggens Latches.....net @ dis 10 %
Mattocks.—Long and Short Cutter.....dis 15 %
Western Pattern.....dis 15 %
Pennsylvania Pattern.....dis 15 %
Molasses Gates.
Enterprise Mfg. Co.'s Measuring Faucets.....dis 20 %
Stebbins' Gates.....dis 60 @ 60&10 %
Lincoln's " .....dis 40 @ 40&10 %
Landers, Frary & Clark's Petroleum...dis 10 @ 10&10 %
Taylor's Petroleum Faucets.....dis 20 @ 20&10 %
Rakes.—Cast Steel Garden.....dis 50 %
Malleable Garden.....dis 33⅓ %
Wood Head Iron Teeth.....dis 30 @ 40 %
Rules.—Stanley Rule and Level Co.....dis 60 @ 60&10 %
Steven's and Hubbard's.....dis 60 @ 60&10 %
Squares.—Steel and Iron, new list.....dis 50 %
Saws.—Diston's Cross Cut.....dis 12½ %
Diston's Hand.....dis 12½ %
W. McNiece's H'd, Cross-Cut & Circ'r, new list..dis 15 %
Boynton's Lightning, new list.....dis 30 %
Shovels and Spades.
Rowland's Plain Back, list Feb. 1873.....dis 20&10 %
" Back Strap " .....dis 20&10 %
Oliver Ames & Sons.....net list
Brady Shovel Co.....dis 7½ %
Sad Irons.—Reading (pianed face).....per lb. 4¾c.
Coquanock (polished face)..... " 4¾c.
Stove Polish.—Gem.....₱ gross, $5 00
Onyx..... " $5 00
Scythes.—Golden Clipper.....₱ doz. $11 50
Clipper No. 10..... " 10 50
Common Scythes.....₱ doz $7 00 @ 10 00
Screws.—Iron.....new list, April 1st, 1873, dis 47½ %
Brass.....dis 50&10 %
Spoons.—
Plated Spoons, Rogers Bros.'...new list dis 30 @ 30&5 %
Britannia Spoons.....dis 40 @ 40&5 %
German Silver.....new list dis 10 @ 15 %
" Light.....new list dis 15&5 %
Try Squares.—Diston's.....dis 12½ %
Stanley Rule and Level Co.....dis 40&10 %
Willis Tyrall, No. 2.....dis 30&10 %
Willis Tyrall, No. 1.....dis 25&10 %
Tacks, &c.—Half Weight Tacks.....dis 67½ %
" " by the case.....dis 67&7½ %
Clout and Finishing Nails.....7½ %
" " by the case.....dis 7½ %
Traps.—Genuine Oneida—Newhouse list.....dis 20 %
Imitation " " .....dis 20&10 %
Wrenches.—Coes Genuine.....dis 30 @ 30&10 %
Coes Imitation Wrought Bar.....dis 45 @ 45&5 %
" " Malleable Bar.....dis 50 @ 50&5 %
" " (Kellogg) Malleable Bar.....dis 55 @ 50 %
Tafts Pattern.....60 %
" " Kelloggs.....dis 60&10 %
Wire.—No. 0 to 19.....dis 30 %
No. 19 to 26.....dis 30 %
No. 27 to 36.....dis 33⅓ @ 35 %
Coppered 0 to 12.....dis 1 @ 20 %
Tinned Broom Wire.....dis 15 @ 20 %

BUFFALO.

Reported by Messrs. Sidney Shepard & Co.

Sept. 26 1873.

Axes, Chopping—"Francis Axe Co '.....$13 00 @ $14 50
Augers—C. S. Cut.....dis 50&10 %
Bits, Auger—Pierce s.....dis 25 %
Jennings'.....dis 10 %
Bells, Cow—Yaw's Genuine.....dis 20 %
Bellows—Smiths'.....dis 20 %
Bolts—Carriage and Tire.....dis 70&5 %
Braces, Bit—Barber's.....dis 40 %
Spofford's Patent.....dis 40 %
Brads, Cut.....dis 50&7½ %
Boards—Stove, Brooks' Patent.....dis 30 %
Butts—Brass.....dis 20 %
Cast Loose Joint.....dis 50 %
" " Pin.....dis 40&5 %
" " Japanned.....dis 40&5 %
" " Silver Tipped.....dis 25 %
Wrought Narrow.....dis 30 %
" Broad, Loose Joint.....dis 35 %
" Table and Back Flaps.....dis 35 %
Wrought Butts, Loose Pin.....dis 35 %
Belting—Rubber.....dis 30 @ 33⅓ %
Leather, new list.....dis 30 @ 30&5 %
Beaters, Egg, "Peerless".....per doz $4 50
Brick—Bath (box of 3 doz) Best English.....$1 50
"Rutherford".....$1 38

Bung Borers—"Enterprise".....dis 20 %
Chalk—White, Carpenter's.....₱ gross, 60c
Red, Carpenter's ..... " 80c
Blue, " ..... " 90c
Crayon School ..... " 14c
Chisels—Firmer Socket.....dis 60&10 %
Framing Socket.....dis 60&10 %
Corner Socket Chisels.....dis 60&10 %
Slick's Carpenters'.....dis 60&10 %
Castings—Malleable.....₱ ℔ 16½c
Cherry Seeders.....per doz $12 00
Elbows—Corrugated..... 5 5½ 6 7 } dis 15 %
Charcoal.....$4·25 5·25 5·25 6·50 }
Russia.....10·00 13·00 13·00 14·00 }
Flies—Wheeler, Madden & Clemson's.....dis 42½ %
Freezers, Ice Cream—"Champion".....dis 33⅓ %
Gates—Molasses—
Patent Self-Measuring.....₱ doz., $42 00; dis 20 %
Hinges—Window Blind—
Clark's No. 20.....dis 50&5 %
Shepard's Standard, and Clark's.....dis 40&10 %
Garretson's .....dis 40, 10&10 %
Wrought Strap and T.....dis 30&7½ %
Hods, Coal—Plain, Black and Galvanized.....net @ 10 %
Funnel, Black and Galvanized.....net @ 10 %
Palace Coal Vases.....net
Fancy and Helmet.....net @ 10 %
Hammers—Maydole's.....net
Yerkes & Plumb's.....dis 5 @ 10 %
Hooks and Staples—Wrought.....dis 50 %
Hooks—Belt.....dis 50 %
Hasps and Staples—Wrought.....dis 60 %
Sad Irons.....₱ ℔ 5c
Kettles—Brass.....₱ ℔, 50c
Enameled.....new list dis 40 %
Knives, Drawing—Oval No. 1.....dis 60&10 %
Razor Blade.....dis 50&10 %
Lanterns "Peerless,".....No. 1 5 10
₱ doz $26 00 $11 25 $13 75 dis 10 %
"Radiant".....No 75 100 150 175
₱ doz $13 13 $13 13 $22 50 $22 50 dis 20 %
Tubular.....$13 00
" with Guards.....13 50
Machines—Apple Paring, "Reading."....$8·50 ₱ doz
Mills, Coffee—Box and Slide, common.....dis 15 %
Box Union and Eagle.....dis 15 %
"Enterprise".....dis 20 %
Nails—Cut, Chesapeake.....$4 50
Clout and Finishing.....dis 7½ %
Shoe.....dis 7½ %
Horse, Ausable.....No. 5 6 7 8 9 10
30 27 25 24 23 22c
" " Finished & Pointed.....add 1c ₱ ℔
" " 1000 lbs.....dis 5 %
" Clinton.....No. 6 7 8 9 10
22 20 19 18 17c
Packing—Rubber.....dis 30 @ 33⅓ %
Pencils, Slate—Soapstone.....4 5 6 in.
30 40 50c. ₱ 100
Case lots.....dis 20 %
Paint—White Lead, U. S. Gov't.....₱ ℔ 9½c
Rivets—Iron, Black and Tinned.....dis 20 @ 25 %
Copper.....dis 10 %
Rope—Manila, ½ inch and larger.....₱ ℔ 17½c
Rules—Boxwood and Ivory, Stephens.....dis 50&10 %
Screws—"American Screw Co"—
Flat Head, Iron.....dis 47½ %
Flat Head, Brass.....dis 60 %
Staples—Blind, Boardman's Pat., ¼ & ⅜.....₱ ℔ 37½c
Skates—White's.....dis 25 %
Barney & Berry's—N. Y. Club Japanned Top.....$2 20
" " B. & B. Club Blued Top..... 2 85
" " B. & B. all Clamp Fastening... 4 25
" " B. & B. Rink.....10 50
Shears—Seymour's.....dis 5 @ 10 %
Traps, Steel—Newhouse.....dis 20 %
Tacks—Half Weight Am. Iron.....dis 67½&7½ %
Vises—Parallel, Buffalo.....dis 15 %
Wrenches—Coes' genuine.....dis 30&10 %
Coes' Imitation.....dis 50&10 %
Tufts' Pattern.....dis 65&10 %
Ware—French, Tinned and Iron.....
Stamped and Japanned.....
Cast Iron Hollow.....dis 20 @ 25 %
Tin Plates.—Add for each X..... 2·50
10x14, IC. Charcoal...$11·75 | 14x20 C. terne.....11·75
12x12, " ...13·25 | 20x28 C. " .....25·00
12½x17, " ...12·25 | 20x28 X. " .....25·50
14x20, " ...13·75
Pig Tin—Straits.....39c @ 40
Banca.....45c @ 46
Bar Tin.....41c
Solder.....No. 1, 21½c; No. 2, 19½c
Sheet Zinc—
"Lasalle".....570 300 200 100 ℔ casks
$11·00 $11·20 $11·20 $11·30 ₱ 100 ℔s
Iron Wire—Bright and Annealed.....dis 30 %
Coppered.....dis 25 %
Tinned.....dis 15 %
Tinned Broom, { Nos. 20 21 22 } .....dis 20 %
{ 20c 21c 21c }
Copper—Sheathing 14 @ 18 oz.....₱ ℔ 37c
Planished.....₱ ℔ 44 @ 46c
Bottoms.....₱ ℔ 39c
Bolts.....₱ ℔ 40c
Braziers' Sheets.....₱ ℔ 40c
Sheet Iron.—
18 Common.....$5 80
24 Common..... 6 00
24 W. D. Wood & Co., Smooth Finish..... 7 25
Am. Russia..... A. B.
14c 12c
Gen. Russia, No. 1 stained.....21c
" " clean.....22c
Galvanized.....dis 20 %

PITTSBURGH.

Card Rates, 60 days.

Flat Bar.—
1½ to 4 x ⅝ to 1 inch..3·8c
4½ to 6 x ⅜ to 1 inch..4·0c
1¾ to 6 x 1⅛ to 1¾ in..4·2c
Horse Shoes.—
All sizes.....5·3c
Heavy Bands.—
3½ to 6 x ¼ & 5-16 in..4·4c
1¾ to 3¼ x ¼ & 5-16 in..4·5c
Light Bands.—
3 to 6 x 3-16 to No. 12..4·8c
1¾ to 2¾ x 3-16 to No. 12.....5·0c
Hoops.—2¼ to 3 in....5·1c
3½ to 4¼ in.....5·3c
1¾ to 2 in.....5·3c
1¾ to 1 11-16 in.....5·6c
1¼ & 1¼ in.....5·9c
Round and Square.—
1 to 1¾ in.....3·8c
2 to 2¾ in.....4·1c
3 to 3¾ in.....4·3c
3¾ to 4 in.....4·8c
⅞ to 9-16 in.....4·2c
Oval Iron.—
⅞ to 1¾ in.....4·4c
⅞ to ¾ in.....4·6c
⅝ to ¾ in.....5·2c
1¼ & 1⅜ x ⅜ to ¾ in....4·0c
1 & 1¼ x ⅜ to ¾ in.....4·1c
⅝, ¾ & ⅞ x ⅜ to ¾ in..4·2c
Nail rods.....7·7c
⅝ to 1¼ x ¼ & 5-16 in...4·8c
⅛ to ¾ x ¼ & 5-16 in....5·0c
1 in.....6·3c
⅞ in.....6·8c
¾ in.....7·3c
⅝ in.....7·8c
½ in.....8·3c
½ to 7-16.....4·5c
⅜ in.....4·6c
5-16 in.....5·0c
¼ in.....5·4c
5-16 in.....7·4c

	Boiled.	Charcoal.	Jun.
Sheet Iron, 10 to 14.....	5·8	7·3	8·8
" 15 to 20.....	6·0	7·5	9·0
" 21 to 24.....	6·2	7·7	9·2
" 25 to 26.....	6·4	7·9	9·4
" 27.....	6·6	8·1	9·6

All sheets over 28 in. wide, ½c. ₱ ℔ extra.

Tank Iron—
3-16, ¼ & ⅝ in. thick..3·6c
Boiler Plate Iron.....3·5c
Heads not flanging...6·7c
Heads flanging.....8·5c
Plow Slabs.....6·4c
Plow Wings.....6·6c
Railroad Iron—Countersunk and Punched.—
1¼ x ⅜, 7-16 & ½ in ...4·3c
1¼ x ½ & 5-16 in.....5·3c
1¼ & 2 x ⅝ & ¾ in..4.3c
1¾ x ⅝ in.....4·5c
Extras for Cutting to Length.—
Flat bars and rounds and squares.....1c
Flat bars for tire.....1c
Heavy bands.....3c
Light bands and wagon box iron.....4c
Hoops.....5c
Nails—Standard list.....$4 50
100 keg lots 12½c. off.

The following are the Card rates of Lewis, Oliver & Phillips:

Iron, standard list, assorted sizes, for large orders, 3·8c, card rate, 2 % off net.
Iron Wedges.....5½c ₱ ℔ net
Norway Nail Rods.....9½c ₱ ℔ net
Fence Pickets—
⅝ round, bent to shape, 80c ₱ ft. of fence, less 5 % off net
Discount off Standard List.
Carriage and Tire Bolts (new list).....60&15 % off net
Plow Bolts.....25 % off net
Stove Bolts.....at the list price
Machine and Square Head Bolts.....25 % off net
Coach and Lag Screws.....25 % off net
Bolt Ends.....20 % off net
Pat. Hot Pressed Square and Hexagon Nuts, small sizes, from 3-16 to ⅜ in.....6 c ₱ ℔ off net
Pat. Hot Pressed Square and Hexagon Nuts, large sizes, from 7-16 to 2 in.....4½c ₱ ℔ off net
Washers, all made from new band iron, small sizes, from 3-16 to ⅜ in.....7 c ₱ ℔ off net
Washers, all made from new band iron, large sizes, from 7-16 to 1⅛ in.....5 c ₱ ℔ off net
Nuts and Washers in 25 lb. boxes, 1c ₱ ℔ ex. Nuts and Washers in lots less than one keg each size, 1c ₱ ℔ ex.
Harrow Teeth, in lots of 1 ton or more, packed in casks, 1 in. diam. 5c ₱ ℔ net; ⅞, ¾ in. diam. 8c ₱ ℔ net; ⅝ in. diam. 5½c ₱ ℔ net.
Patent Headed Harrow Teeth, packed in casks, ½c ₱ ℔ ex
Skein Bolts, in bulk, in lots of 5 kegs or more, ⅝ in. diam. 8c ₱ ℔ net; 9-16 in. diam. 9c ₱ ℔; ½ in. diam. 10c ₱ ℔. 1c ₱ ℔ extra when less than 1 keg of each size is ordered.
Screw Hook-and-Eye Hinges, ¼ to 1 in. diam. 9½c ₱ ℔ net; ⅝ in. diam. 10½c ₱ ℔ net; ½ in. diam. 12½c ₱ ℔ net.
Screw and Strap Hinges, in lots of 100 pairs or more, 14 to 36 in. long 7c ₱ ℔ net; 8, 10 & 12 in. long, 8½c ₱ ℔ net.
Strap and T Hinges.....20 % off net, delivered
Screw Hitching Rings.....$6 50 ₱ 100 net
Duck Nest Tuyere Irons.....$16 00 ₱ doz net
Cast Iron Washers.....₱ ℔ 4½c net
Bridge and Roof Bolts—
1 to 2 in. diam. over 8 ft. long.....₱ ℔ 5½c net
1 to 2 in. diam. from 4 to 8 ft. long..... " 5½c net
1 to 2 in. diam. from 1¼ to 4 ft. long..... " 6 c net
⅝, ¾ and ⅞ in. diam. over 4 ft. long..... " 6½c net
⅝, ¾ and ⅞ in. diam. from 1¼ to 4 ft. long " 6½c net

WAGON HARDWARE.

Wagon Box Strap Bolts—

10 in. long by 7-16 at Screw End,	₱ set of	8 bolts..				55c
12 "	½	"	"	8	" ..	70c
10 "	9-16	"	"	8	" ..	90c
12 "	9-16	"	"	8	" ..	
14 "	9-16	"	"	8	" ..	$1 00
10 in. long by ⅝ at Screw End,	₱ set of	8 bolts..				1 00
12 "	⅝	"	"	8	" ..	
14 "	⅝	"	"	8	" ..	1 10
16 "	⅝	"	"	8	" ..	1 20

5c ₱ set for each additional inch over 14 in. All lengths made.
Wagon Box Rods, narrow track, each.....18c
" " wide track, each.....20c
Single Tree Irons, ₱ set of four pieces.....38c
Wrought Iron Bolster Plates, 2¾ in. wide, ₱ set.....60c
" " ¾ " " 65c
" " 3¼ " " 70c
" " 3½ " " 75c
Wagon Brake Ratchets, each.....16½c
" " " finished with guard, each..45 c
Wrought Hammer Straps, heavy pattern, each.....16 c
" " " light " each.....13½c
" Rub Irons, each.....11 c
Stay Chain Hooks, each.....8 c
Double and Single Tree Clips, figure 1, each.....9 c
" " " " 2, each.....10 c
" " " " 3, each.....12 c
Strap Bolts, Rods, Single Tree Irons, Bolster Plates, Brake Ratchets, Hammer Straps, Rub Irons, Stay Chain Hooks and Clips, in lots of 100 sets.....dis 25%
Wagon Box Staples, 1½ to 2¾ in. to clinch, ₱ 100 $13 50 net
" " Box Iron, to rivet on, ₱ 100 9 50 net
Neck Yoke Eyes, each.....5½c net
" " with ⅝ rings, each.....8½c net
King Bolts, ⅝, 1, 1¼, and 1½ in. diam.....₱ ℔ 5½c net
Wagon Rivets, ex. large, oval and steeple head, ¾ in. diam. all lengths.....10 c net
Wagon Rivets, 3-16 in. diam., all lengths.....12 c net
" " & Nails, in 5 ℔ paper boxes....₱ ℔ 1c extra
" " in 25 ℔ wood " ....½c extra
Wagon and Hinge Nails, ¼ in.....₱ ℔ 17 c net
" " " 3-16 in.....19 c net
Double Tree Plates.....
Coupling " .....} 9 c net
Tongue " .....
Neck Yoke Plates.....12 c net
Tongue Cap Iron, 1¾, 2 & 2¼ in. wide, same price ₱ ℔ as Band Iron.
Wagon Chains, Stay Lock and Tongue, 5-16 in, ₱ ℔ 11½c net; ¼ in., 12½c. net

Steel.

THREE 1st CLASS PRIZE MEDALS. CLASSES 1, 21, 22, Great Exhibition of Industry, LONDON, 1851.

MEDAL OF HONOUR, SOCIETY OF ARTS & INDUSTRY, LONDON, 1856.

1st CLASS PRIZE MEDAL, CLASS 1st UNIVERSAL EXHIBITION OF INDUSTRY PARIS, 1855.

COCKER BROTHERS,

SUCCESSORS TO

SAML. COCKER & SON,

(Established 1752.)

SHEFFIELD. ENGLAND

MANUFACTURERS OF

CAST, [illegible], SHEET, AND BLISTER STEEL, OF EVERY DESCRIPTION.
BEST CAST STEEL WIRE, ADAPTED SPECIALLY FOR MECHANICAL PURPOSES;
Also for ROPES, NEEDLES, FISH HOOKS, PINS, CRINOLINE, &c.

BEST CAST STEEL FILES, SAWS, EDGE TOOLS,
HACKLES, GILLS, CARD CLOTHING, CARD TEETH, HACKLE AND GILL PINS,
FISH HOOKS, NEEDLES. &c.

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WM. JESSOP & SONS,

MANUFACTURERS OF

STEEL,

AND IMPORTERS OF IRON

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PHILADELPHIA, Jas. C. Hand & Co.....PROVIDENCE, Nightingale & Kilton.
CHICAGO, Crerar, Adams & Co.....NEW ORLEANS, Folger & Co.
CINCINNATI, Augustus Wessel.....SAN FRANCISCO, Huntington, Hopkins & Co.

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MOSS & GAMBLE **SUPERIOR C. S. "FULL WEIGHT" FILES,**

Cast Steel Hammers and Sledges. Also, "M. & G." Anvils and Vises.

WARRANTED CAST STEEL, especially adapted for DIES and TURNING TOOLS, DRILLS, COLD CHISELS, PUNCHES and all kinds of MACHINISTS' TOOLS.
Celebrated Improved Mild Centre Cast Steel, for Taps, Reamers, and Milling Tools, warranted not to crack in hardening Taps of any size.
Swede Spring Steel, especially adapted to Locomotive and Railway Car Springs.
English Spring and Plow Plate Steel.
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AND GENERAL MERCHANTS,

CARLISLE WORKS, SHEFFIELD, ENGLAND.

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Philadelphia, 505 Commerce Street.
Boston, 21 Oliver Street.

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LIMITED.

BARROW IN FURNESS,

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Steel Rails, Tyres, Wheels,

Axles, Shafting, Boiler & Ship Plates, Bessemer Pig Iron, etc., etc.

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STEEL

For Tools, Cutlery, Saws, Files, Augers, Gimblets, &c.; Sheet Cast Steel for SPRINGS AND STAMPING COLD;

ALSO THE CELEBRATED

DOG BRAND FILES,

Unsurpassed, if equaled, in quality.

Bailey Lane Works, Sheffield, England.
Warehouse 82 John St., New York.

Established 1810.

CORPORATE MARK

STANCH

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Steel.

SANDERSON BROTHERS & COMPANY,

(LIMITED)

MANUFACTURERS OF THE

CELEBRATED CAST STEEL,

WARRANTED MOST SUPERIOR FOR TOOLS.

DARNALL WORKS,
ATTERCLIFFE FORGE,
WEST STREET WORKS,
} SHEFFIELD, ENGLAND.

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PHILADELPHIA, Wm. H. Sowers.
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Manufacturers of all Descriptions of Steel.

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Cast and Double Shear STEEL,

In Bars, Sheets and Coils, for fine Pen and Pocket Cutlery, Table, Carving, Butcher and Shoe Knives, Turning Tools, Dies, Files, Clock or other Springs, Saws and Tools of every variety.

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In calling the attention of consumers of Steel in any of the varieties above enumerated, we would respectfully assure them of our ability to supply an article that cannot be excelled in quality, temper, and adaptation in all respects to the purposes for which it may be required. Half a century of practical experience in all departments of Steel manufacture, a long established reputation in England, and the Continent of Europe, and in the Eastern States principally of this Country, encourage us to solicit a universal trial of our Steel for the above or other purposes for which a first class Material in quality, temper, and durability, is needed

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Manufacturers of all descriptions of

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Particular attention is paid to quality and temper for

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ALSO STEEL of superior quality for **Turning Tools, Taps, Dies, Drills, &c.**

Hot and Cold Rolled Sheets for Clock Springs, Corset Clasps, Pens, &c.

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MANUFACTURERS OF

Hammered and Rolled STEEL of every description

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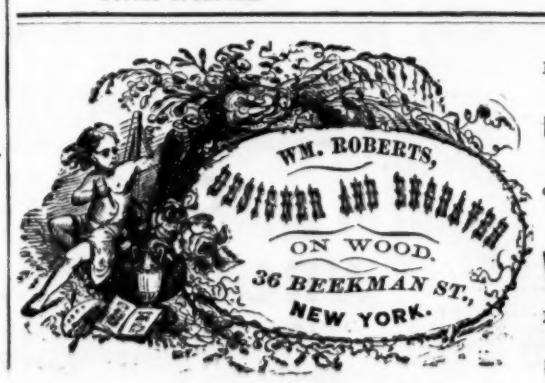

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Machinery.

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SINGER, NIMICK & CO.

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Manufacturers of **Extra Quality Tool**

CAST STEEL,

Patent Rolled

SAW PLATES,

All descriptions of **Cast and German**

Spring and Plow Steel,

Elliptic and Side Springs, Seat Springs,

AXLES, STEEL TIRE,

Plow Wings, Shares, Cultivators, Reaper Bars, Crow Bars, &c., &c.

Warehouse, 83 Water and 100 First Streets.

ISAAC JENKS & SONS,

Minerva & Beaver Iron & Steel Works,

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MANUFACTURERS OF

"Jenks" Spring Steel, Cast and Swedes Spring Steel,

TIRE, TOE CORK, SLEIGH SHOE, BLISTER & PLOW STEEL.

Also, Plow and other Iron.

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43 Chambers St., New York.

A full assortment of "Jenks" Spring Steel in stock.

MILLER, BARR & PARKIN,

Orescent Steel Works,

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Manufacturers of all descriptions of

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EQUAL TO ANY IN THE MARKET.

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DUPONT'S GUNPOWDER MILLS,

ESTABLISHED IN 1801,

Have maintained their great reputation for 70 years. Manufacture the

Celebrated Eagle Ducking, Eagle Rifle and Diamond Grain Powder.

Also, SPORTING, MINING, SHIPPING, AND BLASTING POWDER

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For sale in all parts of the country. Represented by

F. L. KNEELAND,

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LAFLIN & RAND POWDER CO.,

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invite the attention of the the Hardware Trade to their facilities for delivering

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POWDER

IN EVERY PART OF THE UNITED STATES, from having agencies and magazines at all prominent points, beside our works at

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The superiority is well known of our brands Rifle Powder:

Orange Rifle, Orange Ducking, Lightning, Audubon.

SAFETY-FUSE at wholesale.

BOSTON.

(Reported by Macomber, Bigelow & Dowse, 42 to 48 Batterymarch St.)

Axes.—Forester's Favorite, Bronzed $13 00
Blue Jackets, Blue 12 50
Excelsior, Red 12 00
Chopper's Pride, Bronzed 11 00
Red Cross, Red 10 50
Red Cross, Handled 13 50
Boy's Handled Blue Jackets 12 00
Bells.—Hand .... dis 60&10 %
Sleigh, fancy body straps, patent leather, cloth bound, W. M., 30 bells, No. 1 .... per strap $1 70
Sleigh, patent leather, cloth bound, W. M., 36 bells, No. 1 .... per strap, $1 80
Sleigh, patent leather, leather bound, ex. tinned, 30 bells, No. 1 .... per strap $2 38
Sleigh, patent leather, leather bound, ex. tinned, 36 bells, No. 1 .... per strap $2 50
Sleigh, patent leather, leather bound, silver plated, 30 bells, No. 1 .... per strap $3 38
Sleigh, patent leather, leather bound, silver plated, 36 bells, No. 1 .... per strap $3 50
Sleigh, shaft straps, W. M., House, 6 bells, No. 1, ... per pair 75c
Bevels.—Star Tool Co. .... dis 33⅓ %
Bits.—Auger, Griswold's .... dis 30&10 %
Auger, Jennings .... dis 10 %
Bolts.—Carriage, Common, new list .... dis 65&10 %
Borers.—Angle, Backus' .... dis 30 %
Boring Machines.—Angle .... each $5 25
Common, Snell's quality .... each 4 00
Breast Drills.—Miller's Falls, $30 per doz .... dis 25 %
Braces.—Barber's .... dis 40 %
Backus's .... dis 45 %
Spofford's .... dis 40 %
Butts.—Union Drilled Loose Joint .... dis 45 %
" " Wire Fast Joint .... dis 35 %
" " Acorn Loose Joint .... dis 35 %
Alden's Drilled Plain, Reversible .... dis 35 %
" " Acorn, " .... dis 25&10 %
Wrought Table Butts and Back Flaps .... dis 25 %
Wrought Narrow Butts .... dis 30 %
Castors.—Revised List .... dis 20&10 %
Chisels.—
Socket Framing M., B. & D's, warranted ... dis 60&10 %
Cordage.—Manila .... ⅌ ℔, 18 c
American Tarred Hemp Lath Yarn .... ⅌ ℔, 10c
Corn Hooks.—Extra Quality, Strapped ... ⅌ doz, $2 75
Cow Ties.—
No. 30, open ring, 3 ft., No. 6, with toggle .. ⅌ doz $3 37
No. 35 " 3 ft., No. 6 " snap .... ⅌ doz 3 62
No. 40 " 3½ ft., No. 5 " toggle .. ⅌ doz 3 75
No. 45 " 3½ ft., No. 5 " snap .... ⅌ doz 4 00
No. 50 " 4 ft., No. 4 " toggle .. ⅌ doz 4 25
No. 55 " 4 ft., No. 4 " snap .... ⅌ doz 4 50
No. 60 " 4½ ft., No. 3 " toggle .. ⅌ doz 4 50
No. 65 " 4½ ft., No. 3 " snap .... ⅌ doz 4 75
Crow Bars.—Iron, Steel Points .... ⅌ ℔, 6½c
Enam. Ware.—Kettles .... dis 25 %
Files.—Earl Smith & Co.'s English .... $5 to £ gold
American .... $5 to £ currency, less 10 %
Nicholson .... $5 to £ currency, less 7½ %
Funnel Irons.—$2·50 $2·50 $2·50 $3·25 per doz
5, 5½, 6, 7 inch
Deep Flange, $3·50 $3·75 $4·00 per doz
5, 5½, 6 inch
Gauges.—Star Tool Co. .... dis 33⅓ %
Hammers.—Maydole .... dis 5 %
M., B. & D., solid cast steel, adze eye, No. 1, $10; 1½, $8·75
" " " " " " bell face, No. 1, $11; 1½, $9·75.
Hangers & Rollers.—Novelty .... dis 30 %
Hatchets.—Underhill Edge Tool Co. .... dis 10 %
Underhill pattern, solid, C. S. lathing $9 50
Hinges.—Strap and T, Stanley Works .... dis 30&7½ %
Plate, Loose, and Fast Joint .... ⅌ ℔, 8c
Wrought Screw Hook .... ⅌ ℔ 8c
Locks.—P. & F. Corbin .... dis 40 %
No. 408, Iron Face and Bolts, Mortise, 3½ inch, per doz net $1 88
No. 1000, reversible rim knob $2 25
Mattocks.—K. P. & Co., axe finish, long cutter .. $13 75
Short cutter 13 50
Metal.—Babbitt, No. 1, 35c; 2, 25c; 3, 16c; 4, 15c ⅌ ℔
Nails.—10d and larger $4 75
Paper.—Finest Quality Manila .... ⅌ ℔ 11c
Parers.—Reading, New Pattern .... per doz $8 00
Turn Table .... per doz 8 50
Picks.—K. P. & Co., Polished Points—
5 to 6 .... per doz $10 00; 6 to 7, $10 50
Pulleys.—Clark & Co.'s Axle, 1½ in.—
.... per doz 37c.; 2 in., 42c
No. 115, Axle, 1½ in. .... per doz 37c
Plated Ware.—Rogers Bros. .... new list dis 30 %
Pocket Knives.—Conn. Cutlery Co. .... new net list
Rivets.—Black .... dis 25 %
Carriage, oval head, Nos. 3, 4, 5, 7, 7, 8.
13 13 14 14 15 16c ⅌ ℔ net
Rules.—Stephens & Co. .... dis 60 %
Saws.—Disston's .... dis 12½ %
Lightning X cut, Boynton's .... per foot 70c
" Saw Blades, 32 inch .... per doz $7 00
" Framed Saws .... per doz $10 00
Common " " .... per doz 6 00
Disston " " .... per doz 9 00
One man X cut.—Lightning .... per foot 87½c
Disston's $3·00 each .... dis 12½ %
Screws.—American Screw Co. .... dis 47½ %
Shovels.—O. Ames .... dis 2½ %
M. B. & D. .... dis 5 %
Sinks.—Cast Iron, 2, 2½, 3, 3½, 4, 4½ feet.
$1·37 $1·62 $2·25 $2·75 $3·75 $4·75 each.
Tools.—Aiken's Pattern, 20 in set; Miller's Falls, $12·00 per doz .... dis 15 %
Traps.—Oneida .... dis 20 %
Blake's .... dis 20&5 %
Try Squares.—Star Tool Co. .... dis 33⅓ %
Vises.—K. P. & Co.'s Solid Box, Blacksmith ... ⅌ ℔ 15½c
Parker's Parallel .... dis 5 %
Backus .... dis 25 %
Weights.—Window Weights .... ⅌ ℔ 2½c
Wrenches.—Coe's Genuine Wrenches .... dis 40 %
Wringers.—
Novelty and Universal, Tub No. 2: less than 5 doz .. ⅌ doz $72 00; 5 doz .. ⅌ doz 69 00; 10 doz .. ⅌ doz 67 00
Novelty Bench, No. 4: less than 5 doz .. ⅌ doz 108 00; 5 doz .. ⅌ doz 104 00; 10 doz .. ⅌ doz 101 00
Zinc.—Sheet .... ⅌ ℔ 10½c

Boston Metal Market.

(Corrected by Fuller, Dana & Fitz.)

Tin Plates.—	⅌ box	I. C. Coke	@ $12 00
I. C. Charcoal ..	@ $13 50	" Terne 11 50	@ 13 00
Pig Tin.—	⅌ ℔	Straits, gold	32c
Banca, gold	37c	English "	32c
Copper.—	⅌ ℔	Braziers	40c
Sheathing	36c	Ingot	28c
" Yellow	c	Old	26c
Bolt	40c		
Lead.—	⅌ ℔	Sheet and Pipe	9·45c
Spanish Pig, gold	6½c	Old	6½c
Spelter.	⅌ ℔	American, gold	7c
Silesian, gold	8c		

Zinc.—Sheet .... ⅌ ℔ 10½c
Iron.—Sheet Iron, Russia, gold .... ⅌ ℔ 18c
Sheet Iron, English .... " 7c
" " American .... " 7½c
" " Galvanized .... " 11c @ 18c
Swedes Bar Iron, Flat, gold .... ⅌ ton, $145 00 @ $155 00
" Shoe Shapes, gold .... 155 00 @
Norway Bar Iron, Flats, gold .... 145 00 @ 152 00
" Shapes, gold .... 155 00 @
" Round, 2 in. to ⅜ in., gold .... 147 50 @ 152 50
" " 11-16 to ⅜ in. " .... 162 50 @
" " 5-16 to ¼ in. " .... 165 00 @
" Nail Rods, Rolled " .... 177 50 @
" " U. B. " .... 172 50 @
" " Benzon " .... 167 50 @
" " Vasa " .... 160 00 @
" " N I W " .... 160 00 @
English Refined Bar Iron .... 87 50 @
Scotch Pig Iron .... 49 00 @ 45 00
American " .... 38 00 @ 48 00
Wrought Scrap Iron .... 45 00 @

Steel.—	⅌ ℔	German	11c
Eng. Tool, gold	16c	Spring	9c
" Mach. "	10c	Tire	8c
American Tool	16c	Sleigh Shoe	6½c
" Mach	11c	Toe Calk	8½c
Bessemer ...... 8½c @ 9½c			

ST. LOUIS.

Corrected weekly by Semple, Birge & Co.

Anvils.—Armitage .... ⅌ ℔, gold, 15c
Peter Wright's .... " 14½c
Wilkinson's .... " 12½c
Apple Parers.—Conqueror .... ⅌ doz, $9 00
Lightning .... " 9 00
Turn Table .... " 9 00
Augers and Bits.—Cook's .... dis 25 %
Ives' .... dis 20 %
Jennings' .... dis 5 %
Snell's .... dis 12½ %
Axes.—Hunt's .... ⅌ doz $14 50 @ 15 50
Lippincott's .... " 14 00 @ 15 00
Lippincott's Pioneer .... " 14 50 @ 15 50
Simmons' .... " 13 50 @ 14 50
Axles.—Kritch & Crane Mfg. Co.'s—
Patent Taper Axles .... dis 10 %
Swelled Taper Axles .... dis 10 %
Concord Axles .... dis 10 %
Red Jacket Axles .... dis 10 %
Common Axles, 1½ inch and upward .... ⅌ ℔, 8½c
" " less than 1½ inch .... " 9½c
Bells.—Troy, Church .... ⅌ ℔, 50c
Light Brass, Hand .... dis 50 %
Moore's, Cow .... dis 10 %
Bolts.—Arms, Bell & Co.'s Machine .... dis 10 %
Arms, Bell & Co.'s Carriage and Tire .. new list dis 70 %
Norway Iron Carriage and Tire .... dis 40 %
Cast Iron Barrel, Shutter, &c. .... dis 25 %
Cast Butt Hinges.—Narrow Fast Joint .... dis 25 %
Broad Fast Joint .... dis 40 %
" Loose " .... dis 50 %
Reversible .... dis 45 %
" Japanned and Silver Tipped .... dis 40 %
Loose Joint "Acorn" " " .... dis 40 %
Excelsior Reversible Blind .... dis 80&10 %
Lull & Porter's Blind .... dis 35 %
Wrought Butts.—Narrow .... dis 20 %
Reversible .... dis 25 %
Broad .... dis 25 %
Table Hinges .... net list
Back Flaps .... net list
Inside Blind Hinges .... net list
Casters.—Porcel'n Wheel Bed or Plate .. rev. list dis 15 %
Iron or Brass Wheel Bed or Plate ....
Chain.—Eng. Coil .. 3-16 ¼ 5-16 ⅜ 7-16 ½ in.
14 11½ 10½ 10 9½ 9c gold
Trace .... 6½-10-2 75c "
7-10-2 80c "
German Coil and Halter .... new list add 25 % "
American Coil—Short Link.
Size, inches .... ¼ 7-16 ½ 9-16 ⅝
Price cents ⅌ ℔ .... 12½ 12½ 10½ 10 9½ net
Size, inches .... 11-16 ¾ 13-16 ⅞ 15-16
Price, cents ⅌ ℔ .... 9½ 8¾ 8¾ 8½ 8¾ net
Size, inches 1 1 1-16 1⅛ 1 3-16 1¼
Price, cents, ⅌ ℔ .... 8½ 8½ 8 7½ 7½ net
All larger sizes same price as 1½ in. Stud chain 1c less than same size close link.
Chisels.—Socket, Firmer or Framing .... dis 55 %
Clothes Wringers.—Colby's .... ⅌ doz $66 00
Novelty .... " 72 00
Universal .... " 72 00
Monitor .... " 72 00
Coffee Mills.—Parker's .... net list
P. S. W. & Co.'s .... net
Corn Knives.—Dunn E'ge T'ol Co.'s Clip .. ⅌ doz $5 75
Disston's .... " 6 00
Crow Bars.—Steel Pointed .... ⅌ ℔ 8 @ 10c
Solid Cast Steel .... " 20c
Cutlery.—J. Russell & Co.'s; Lamson, Goodnow & Co.'s; Landers, Frary & Clark's .... new list, dis 15 %
Files and Rasps.—
Nicholson's Mill Files .... $5 50 to the £, currency
Nicholson's Other Files .... 5 00 to the £, currency
Butcher's Files .... 7 00 to the £, currency
Heller's & Bros. Horse Rasps ... 5 25 to the £, currency
Forks and Hoes.—
Auburn Mfg. Co.'s Hay and Manure Forks ...... dis 25 %
" " Handled Hoes .... dis 20 %
" " Planter Eye Hoes .... add 20 %
Winsted's Planter Eye Hoes .... add 20 %
Hammers.—Yerkes & Plumb .... new list net
Masons' Hammers .... ⅌ ℔ 20c
Smith Hand Hammers .... " 22c
Handles.—Axe ..... Extra. $2·75; No. 1. $2·25; No. 2. $1·75; No. 3. $1·00
Pick .... Extra. $2·50; No. 1. $2·00; No. 1½. $1·75; No. 2. $1·25
Smith & Montross Fork, Hoe and Rake .... dis 10 %
" " Broom and Mop ...... $12 @ $18 ⅌ M.
Harrow Teeth.—1 inch iron .... ⅌ ℔ 5½c
¾ and ⅞ inch iron .... " 5¾c
⅝ inch iron .... " 5¾c
Barbed or Headed .... ½c extra
Hatchets.—Hunt's .... net list
Simmons' .... dis 5 %
Hay Knives.—Lightning .... ⅌ doz $22 00
Dunn Edge Tool Co.'s .... ⅌ doz $14 50—dis 15 %
Fisher's .... " 16 50—dis 10 %
Hinges.—Strap and T—St. Louis make .... dis 25 %
Horse Nails.—Eureka .... 23c rates
Ausable .... 22c "
Northwestern .... 22c "
Eagle .... 19c "
National Patent Pointed .... 21c "
" " " Extra Finished .... 22c "
Horse Shoes.—R. I. (Perkin's pat.) ..... ⅌ keg $7 00
Burden's .... " 7 00
Mule Shoes .... $1 00 extra
Rhode Island Trotting Shoes .... 2 50 "
Locks and Latches.—
Jones & Nimick's .... revised list dis 40 %
Moorhead, Adams & Co. .... dis 40 %
Norwalk Lock Co.'s revised list .... dis 35 %
Mattocks and Grub Hoes.—
Klein, Logan & Co.'s Mattocks .... ⅌ doz. $15 00 @ 16 00
" Grub Hoes, Oval Eye .... ⅌ doz. 12 00 @ 13 00
Nails.—Wheeling .... $4 75 rates.
Orders for 100 kegs 10c ⅌ keg less.
Picks.—Klein, Logan & Co.'s R. R. and Clay ⅌ doz. $12 00
Klein, Logan & Co.'s Coal .... " 9 75
" " Poll .... " 12 00
" " Stone .... " 16 50
" " Tamping .... " 19 00
Planes.—Ohio Tool Co.'s .... dis 10 %
Eastern .... dis 20 %
Post Hole Augers.—Clark's Patent—
No. 1, ⅌ doz. $27; No. 2, $30; No. 3, $32 .... dis 20 %
Barton's Patent .... ⅌ doz $25—dis 20 %
Vaughn's " .... " 25—dis 10 %
Sad Irons.—Monitor Brand, Silver Polished .... ⅌ ℔ 6c
Sash Weights.—Standard Solid Eyes .... ⅌ ℔ 3½c
Saws.—Disston's .... dis 10 %
Spear & Jackson's .... $5 00 to £ gold
Hubbard, Lippincott, B. & Co.'s .... dis 10 %
Branch, Crooks & Co.'s .... dis 10 %
Livingston's Patent Buck .... net list
Screws.—American Screw Co.'s revised list .... dis 45 %
$2000 worth in 6 months .... 2½ % extra
Scythes.—Blood's C. S. & G. S. .... net list
Dunn Edge Tool Co.'s, Factory List .... dis 15 %
Paris Furnace Co.'s .... dis 25 %
Waldron's English .... $10 00 to £
Scythe Stones.—No. 1 Ind'n Pond ⅌ gr's, $7 00; Extra Indian Pond " 7 50; Premium " 9 50; Diamond Grit " 13 50 — dis 25 %
Shovels, Spades and Scoops.—Ames' .. add $1 to list
Lippincott's .... new list net
Rowland's, Maxwell .... revised list net
Sledges.—Smith's Stone or Coal Sledges—
Steel Face Polished .... ⅌ ℔, 17c
Solid Cast Steel .... " 35c
Striking Sledges .... ⅌ ℔ extra, 1c
Snaths and Cradles .... dis 20 %
Springs.—Cleveland Spring Co.'s—
Carriage and Express .... dis 5 %
Blue Seat Springs .... new list dis 10 %
Tacks.—Norway Tack Co.'s ½ weight .... dis 67½ %
Brads .... dis 50 %
Traps.—Newhouse Patent .... dis 15 %
Reichard's Animal, Wood Bottom .... ⅌ doz $10 00
" " Metal Bottom .... " 12 00
Vises.—Solid Box .... ⅌ ℔ 18c
Wilson Mfg. Co.'s .... dis 15 %
Wrenches.—Coes' Genuine .... dis 30 %
Coes' Pattern .... dis 40 %
Taft's .... dis 50 %

St. Louis Metal Market.

(Corrected Weekly by Messrs. R. Sellew & Co.)

Tin Plate.

IC, 10x14, Charcoal ...	$14 00	IX, 20x28, Terne	$52 00
IX, 10x14, " ...	17 00	IC, continuous, 20 in. x 200 ft	26 00
IC, 12x12, " ...	14 50	IX, continuous, 20 in. x 200 ft	34 00
IX, 12x12, " ...	17 50	IC, 10x14, best Coke ..	18 50
IC, 14x20, " ...	15 00	IC, 10x14, good " ..	18 00
IX, 14x20, " ...	18 00	IC, 10x20	20 00
IC, 14x20, Terne	18 50	IC, 14x20	18 50
IX, 14x20, "	15 50		
IC, 20x28, "	27 00		

Block Tin.
Large Pigs .... 42c | Bars 44c
Small " 43c
Sheet Zinc.
Casks .... ⅌ ℔ 11c | Sheet .... ⅌ ℔ 11½c
Solder.
No. 1, Refined, in bars or plate 23c
No. 2, " " " 21c
Pig Lead 8c
Sheet Copper.—18 to 100 lbs. Sheets 30x60 .... 40c
14 to 16 lbs., Sheets 30x60 .... 42c
10 to 12 lbs., " and 20x72 .... 45c
6 to 9 lbs., " 48c
Tinned, 14 and 16 oz. 14x48 .... 38c
Planished, 14 and 16 oz. 14x48 .... 46c
" No. 7, 8 and 9 .... 48c
Copper Bottoms 40c

Sheet Iron.—	Com'n.	Sm'th.	Char'l.	Jun.
No. 16 to 20	6½c	7½c	8½c	
No. 22 to 24	6½c	7½c	8½c	
No. 26	6½c	7½c	9c	11½c
No. 27	6¾c	7¾c	9½c	11½c

Galvanized Iron .... dis 25 %
Iron Rivets .... dis 15 @ 20 %
Iron Wire .... dis 25 %
Coppered Pail Bail Wire .... dis 10 %
Copper Rivets and Burs .... dis 10 %
Russia Iron.—Nos. 9, 10, 11 and 12, ⅌ ℔ 23c
No. 1, stained, ⅌ ℔ 22c
Imitation Russia, ⅌ ℔ 15c

CHICAGO.

(Reported by Cragin Bros. & Co., 141, 143, and 145 Lake St.)

Tin Plate.—

IC, 20x14, Coke	$12 50	IXX, 14x20, Charcoal ..	20 50
IC, 10x14, Charcoal.	13 50	IXXX, 14x20, " ...	23 50
IX, 10x14, " .	16 50	IXXXX, 14x20, " ...	26 50
IC, 12x12, " .	14 00	IX, 14x14, ...	28 00
IX, 12x12, " .	17 00	DC, 100 Plate, " ...	18 50
IC, 14x20, " .	14 50	DX, " ...	18 50
IX, 14x20, " .	17 50	DXX, " ...	19 50
		DXXX, " ...	22 50

IC, 14x20, Coke Roofing ....
IC, 10x20 Coke, for Gutters 20 50
IC, 14x20, Charcoal Roofing 18 00
IX, 14x20, " 15 50
IC, 20x28, " 27 00
IX, 20x28, " 32 00

Pig Tin.—		Small, 30 ℔	41c
Large, 60 ℔	40c	Bar Tin	42c
Zinc.—			
In casks 1000 ℔ s	11 c	In sheets	11½c
" 500 "	11½c	Slab	9c

Copper.—Copper Bottoms 40c
Sheathing Copper 38
Planished Copper, 14x48 46
Size, 14x52, 14x56, 14x60; Nos. 7, 8, 9 — Planished Copper 48c

Braziers' Sheets, 30x60.—6 to 8 lbs	46 c	15 to 100 lbs	40c
10 and 12 lbs	43c	Ingot Copper	
		Bolt "	45c
Solder.—Extra Fine, C. B. & Co.'s Brand	25c	Ordinary, No. 1	21c
Fine, No. 1	23c	Plumbers' Solder	23c
		Braz'rs' or Spelt'r Solder	35c

Antimony 20c
Babbit Metal .... 15c @ 25c.
Galvanized Iron Conductor Pipe .... ⅌ ℔ 10c

Sheet Iron.—	Common.	Smooth.	Charcoal.
No. 14 to 24	6½c	7½c	8½c
25 & 26	6½c	7½c	9 c
27	6¾c	7¾c	9½c

Add ½c ⅌ ℔ for 30 in. wide.
Galvanized Iron .... dis 25 %

No. 16 to 20	15c	No. 27	18c
21 to 24	16c	28	20c
25 & 26	17c		
Russia Iron.—		No. 13	c
Perfect, 8, 9 and 10	23c	In Sheets, 1c. higher.	
" 11 and 12	22c		
American Russia.—		B	14c
A	15c	In sheets, 1c higher.	
Lead.—		Lead Pipe, in full coils	10½c
Pig	8½c	Lead Pipe, when cut.	
Bar	10c	Sheet Lead	10½c

DETROIT.

(Reported by Messrs. Jewett & Root.)

Tin Plate.—Best Charcoal		**Copper.**—	
IC, 10x14	$12 75	Sheathing	37½c
IX, 10x14	15 50	Copper Bottoms	39½c
XX, 10x14	18 25	**Planished Copper.**—	
IC, 12x12	13 25	Sheathing, 14x48	46c
IX, 12x12	16 00	Boiler Size, No. 7	48c
IC, 14x20	13 75	" " No. 8	48c
IX, 14x20	16 50	" " No. 9	48c
XX, 14x20	19 25	**Pig Tin.**—	
XXX, 14x20	22 00	Large Pigs	39c
XXXX, 14x20	24 75	Small Pigs	40c
DC, 100 Plate	12 25	Bars	41c
DX, "	15 00	**Solder.**—No. 1	21½c
DXX, "	17 75	No. 2	19½c
DXXX "	20 50	**Bright Wire** ... dis 27½ %	
DXXXX 100 Plate ..	23 25	**Sheet Iron.**—	
IX, 14x14	26 00	No. 18 Am. Com	6
IC, 10x14 W	12 25	No. 24 Am. Com	6
IX, 10x14 W	15 00	Pat. Am. Russia "A,"	
Roofing Tin.—Best Char.		Nos. 24, 25 & 26	14c
IC, Terne, 14x20	$11 65	Russia No. 9, 10, 11&12.	21½c
IX, " 14x20	14 40	W. D. WOOD'S & CO.'S SHEET IRON.—	
IC, Terne, 20x28	25 25	Nos. 15 to 20 Smooth	$7 15
IX, " 20x28	29 75	" 21 to 24	7 35
Coke Tin.—		" 25 & 26	7 55
IC, 10x14 Coke	$10 75	" 21 to 21 Char'l ..	8 85
IX, 10x14, Coke	13 50	" 25 & 26 " ..	9 05
IC, 14x20, "	12 75		

Sheet Zinc.—Any width 10½c

CINCINNATI.

Reported by Sellew & Co., Importers and Jobbers Metals, No. 214, 216 and 218 Main street.

Tin Plate.—I. C. 10x14 Charcoal .... $14·00 @ $15·00
I. C. 10x14 best Coke .... 13·00 @ 14·0
I. C. Terne, 14-20 .... 12·50 @ 13·5
I. C. " 20-28 .... 26·00 @ 28·0
I. C. Continuous .... 28·0

Pig Tin.—		Straits	℔ ⅌ 42
Banca	⅌ ℔ 47c	English	42c @ 43c
Solder.—		A 1	⅌ ℔ 25c
S. & Co	⅌ ℔ 28c	Roofing	" 24c
Lead.—Pig ..	⅌ ℔ 7½c @ 8c.	Bar	⅌ ℔ 8c @ 9c
Copper.—			
Ingot	⅌ ℔ 31c @ 33c	Brazier, 6 to 9 lb ...	⅌ ℔ 46c
Planished ...	" 51c @ 53c	" 10 to 14 lb ...	" 43c
Sheathing ..	" 44c @ 46c	" 14 to 100 lb ..	" 40c
Bolt	" 40c	Copper Bottoms ...	" 45c

Zinc.—Cask, 500 to 1000 lbs .... ⅌ ℔ 11½c
Case, 100 lbs .... " 11¾c
Slab .... " 8½c @ 9c

Brass.—		Roll, No. 38 to 40 ...	⅌ ℔ 50c
Roll, No. 6 to 30.	⅌ ℔ 45c	Wire, No. 0 to 20 ...	⅌ ℔ 50c
" 30 to 38.	" 65c	" 20 to 25 ...	" 60c
Babbit Metal.—		Black Lead	⅌ ℔ 25c
Sellew & Co	⅌ ℔ 35c	Market	" 15c

Antimony .... ⅌ ℔ 22c
Bismuth .... ⅌ ℔ $6 0
Nickel .... ⅌ ℔ $3 5
Sheet Iron.—
Russia ...... ⅌ ℔ 20c @ 22c | Am Russia A .. ⅌ ℔ 14 @ 15c; " " B .. " 13 @ 14c

	Com. B.	Smooth Fin. S. L. U.	Smooth D Re'fd.
15 to 20	6·0c	7·5c	9·0c
22 to 24	6·2c	7·8c	9·2c
26	6·4c	8·0c	9·4c
27	6·6c	8·2c	9·6c

Galvanized Iron.—Full bundles .... dis 20 %
Nos. 18 to 20 .... 15c | No. 27 .... 18c
22 to 24 .... 16c | 28 .... 20c
25 to 26 .... 17c
Bar Steel.—Silver, ⅌ ℔ 21c; Crescent, 17½c.
Iron Wire .... dis 15 %
Enameled Ware .... dis 33⅓ %
One Piece Corrugated Elbows.—

Charcoal Iron.		Russia Iron.	
4½ inch ...... ⅌ doz	$3·75	4½ inch ...... ⅌ doz	$8·00
5 " ...... "	4·25	5 " ...... "	10·00
5½ " ...... "	5·25	5½ " ...... "	13·00
6 " ...... "	5·25	6 " ...... "	13·00
7 " ...... "	6·50	7 " ...... "	14·00

Leader Elbows—Flat Crimp Retinned.—

	⅌ doz.		⅌ doz
2-inch	$2 00	2½-inch	$2 25
3-inch	2 50	3½-inch	3 00
4-inch	3 50	4½-inch	4 00

Sheet Iron Bread Pans .... ⅌ ℔ 13c
American Broilers .... ⅌ doz, $13·50
Tinmen's Machines .... net list
Sad Irons .... ⅌ ℔, 5½c
Brass Kettles.—Ansonia 48c

London Metal Market.

(From The Mining Journal.)

	£.	s.	d.	£.	s.	d.
Copper—⅌ ton.						
Best Selected	95	0	0	99	0	0
Tough Cake & Tile	98	0	0	98	0	0
Sheathing and Sheets	99	0	0	103	0	0
Bolts	100	0	0		—	
Bottoms	100	0	0	108	0	0
Old (Exchange)	85	0	0		—	
Burra Burra	98	0	0	94	0	0
Wire .... ⅌ ℔.	0	1	0½		—	
Tubes .... "	0	1	0½	0	1	1
Brass—⅌ ℔.						
Sheets	0	0	10	0	0	11
Wire	0	0	10¼		—	
Tubes	0	0	11¼	0	0	11½
Yellow Metal Sheathing	0	0	9		—	
Sheets	0	0	8¾		—	
Tin—⅌ ton.						
English Blocks	127	0	0	128	0	0
Ditto Bars	128	0	0	129	0	0
Ditto Refined	130	0	0		—	
Banca	130	0	0	131	0	0
Straits	127	0	0	128	0	0
*** Tin Plates—† ⅌ box.**						
IC Charcoal .... 1 qual.	2	0	0	2	3	0
IX " .... 1 qual.	2	6	0	2	9	0
IC " .... 2 qual.	1	18	0	2	0	0
IX " .... 2 qual.	2	3	0	2	6	0
IC Coke	1	12	0	1	16	0
IX "	1	18	0	2	2	0
Canada Plates .... ⅌ ton.	23	0	0	23	10	0
" at works	22	0	0	22	10	0
Spelter—⅌ ton.						
Foreign	27	10	0		—	
To arrive		—			—	
Zinc—⅌ ton.						
In Sheets	32	10	0	33	0	0
Iron—⅌ ton.						
Bars Welsh, in London	12	10	0		—	
" to arrive	12	5	0		—	
Nail Rods	12	15	0		—	
Nail Rods, Staff'd in L'ndon	13	5	0		—	
Bars	13	5	0	14	0	0
Hoops	14	5	0	16	0	0
Bars at Works	12	5	0	15	0	0
Hoops ditto	13	5	0	16	0	0
Sheets, single	15	10	0	16	0	0
Pig, No. 1, in Wales	5	0	0	6	10	0
Refined metal ditto	7	0	0	8	0	0
Bars, common ditto	11	10	0	11	15	0
Do, merchant, Tyne or Tees	11	10	0	11	15	0
Ditto, Railway, in Wales ...	11	0	0	11	10	0
Ditto, Swedish, in London.	19	0	0	19	10	0
To arrive	20	0	0	21	0	0
Pig, No. 1, in Clyde	5	5	0	7	0	0
Ditto, f.o.b., Tyne or Tees ..	4	10	0	5	10	0
Ditto, Nos. 3, 4, f.o.b.		—			—	
Railway Chairs	5	5	0	6	0	0
" Spikes	12	10	0	14	0	0
Indian Ch'coal Pigs in L'don	10	0	0	12	0	0
Steel—⅌ ton.						
Swedish, in kegs (rolled) ...		—			—	
Ditto (hammered)	21	0	0	21	10	0
Ditto, in faggots		—			—	
English, spring	25	0	0		—	
Quicksilver—⅌ bottle.	15	0	0		nom.	
Lead—⅌ ton.						
English Pig, common	23	10	0		—	
Ditto, LB	24	0	0		—	
Ditto, WB	25	0	0		—	
Ditto, Sheet	24	10	0		—	
Ditto, Red Lead	24	10	0	25	10	0
Ditto, White	30	0	0	32	0	0
Ditto, Patent Shot	26	10	0	27	0	0
Spanish	22	15	0		—	

* At the works, 1s. to 1s. 6d. per box less. Terne Plates 2s. per box below Tin Plates of similar brands. † Add 6s. for each X.

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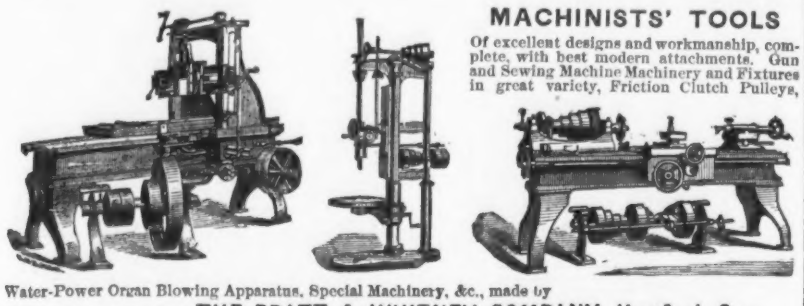

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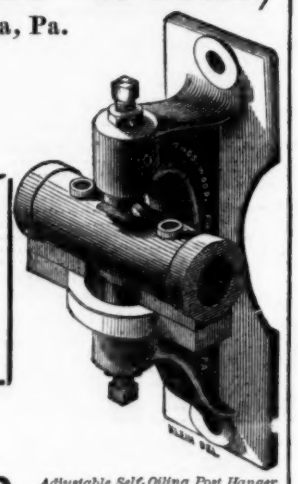

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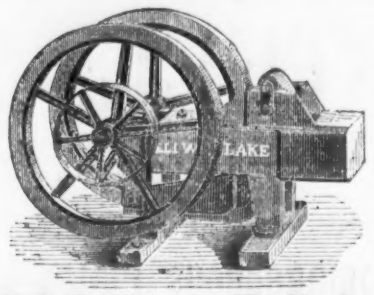

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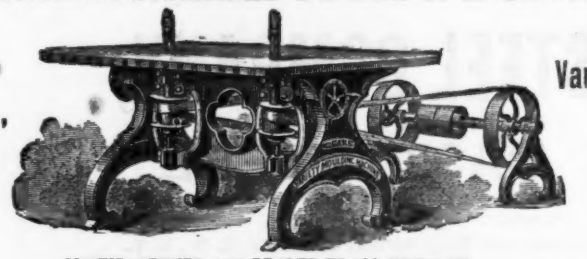

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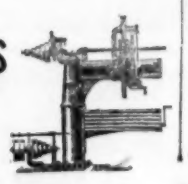

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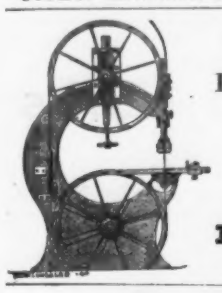

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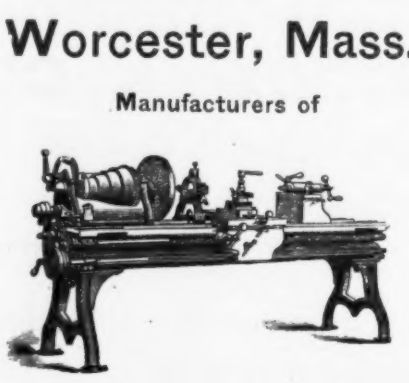

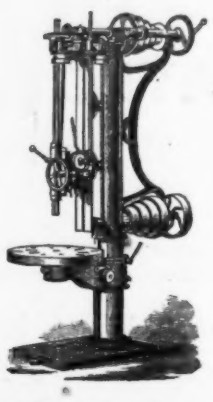

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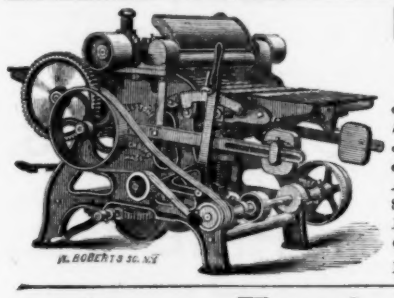

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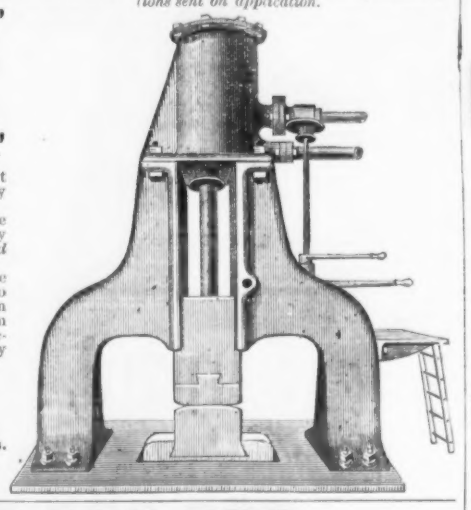

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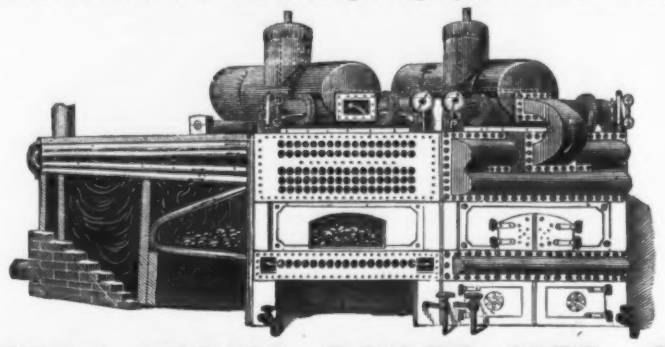

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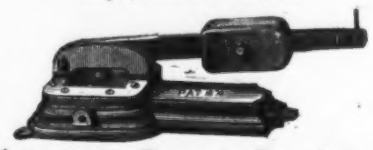

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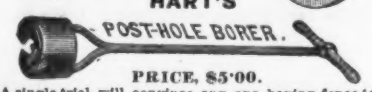

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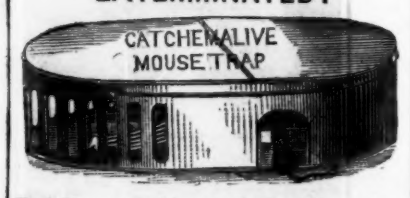

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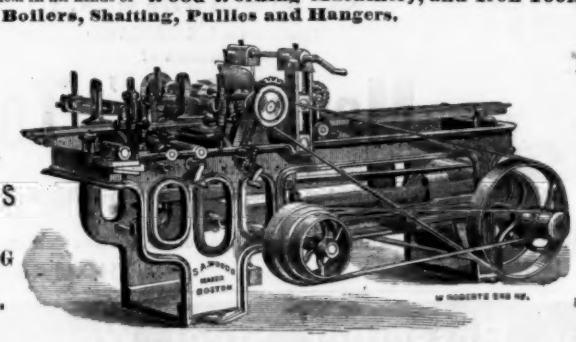

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